EPA Registration Number

89285-2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

December 3, 2013

Isagro USA, Inc.
c/o Amy Plato Roberts
Technology Sciences Group, Inc.
712 Fifth St., Suite A
Davis, CA 95616

Subject: Application for Minor Formulation Notification to add producers for the basic formulation Confidential Statement of Formula (CSF).
IRF135
EPA Reg. No.: 89285-2
Your submission dated October 14, 2013
Decision Number: 483942

Dear Ms. Roberts:

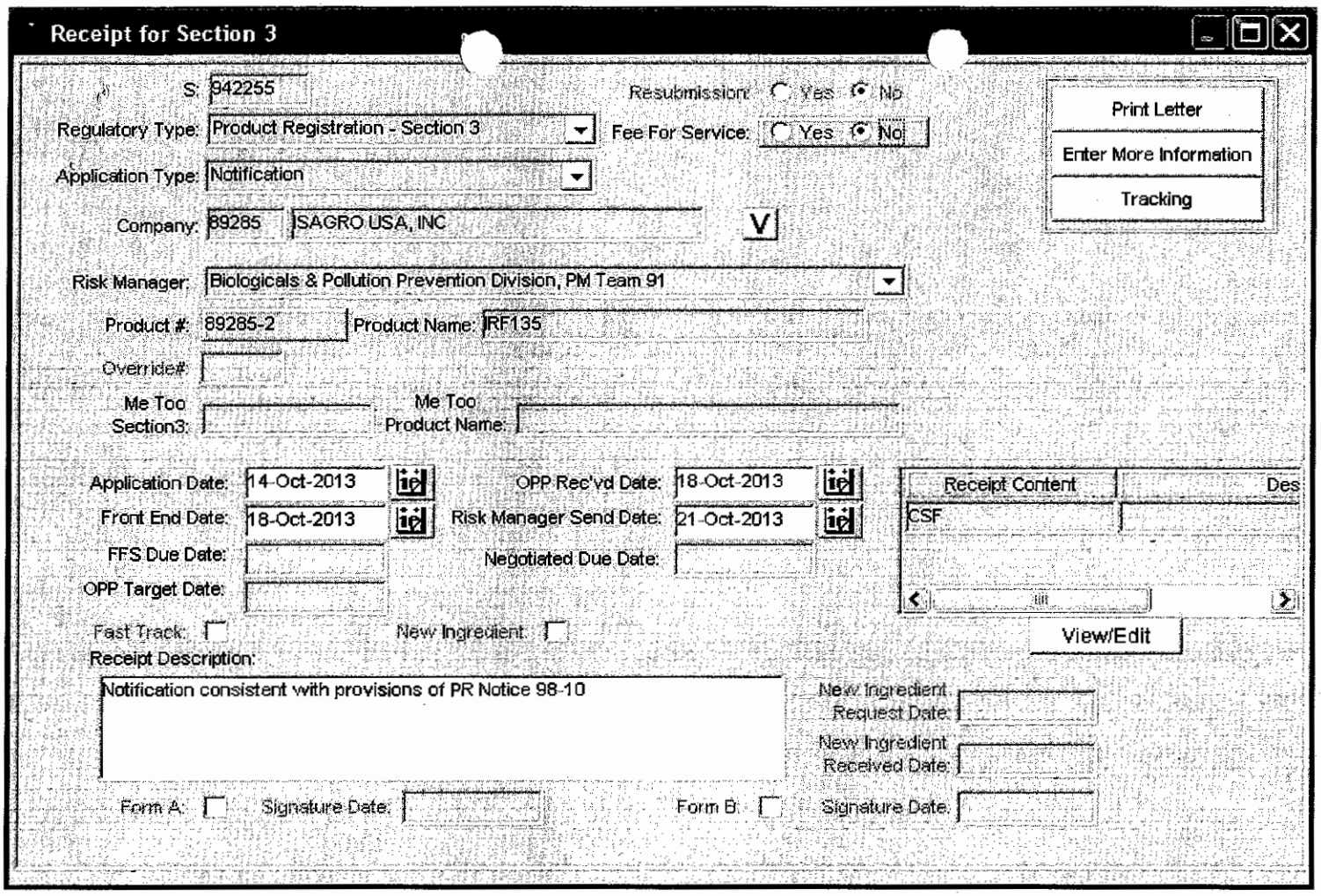
The Biopesticides and Pollution Prevention Division is in receipt of your application for Notification under PR Notice 98-10 dated above. A preliminary screen of this request has been conducted for its applicability under PR Notice 98-10 and it has been determined that the action requested falls within the scope of PR Notice 98-10. Our records have been duly noted and the application submitted has been stamped "Notification Accepted". The acceptable basic formulation CSF dated October 14, 2013 and stamped application will be placed accordingly in our records. The acceptable basic formulation CSF dated October 14, 2013 supersedes all previous acceptable basic formulation CSFs.

If you have any questions concerning this action, please feel free to contact Mr. Colin Walsh at (703) 308-0298 or via email at walsh.colin@epa.gov.

Sincerely,

Linda A. Hollis

Linda A. Hollis, Chief
Biochemical Pesticides Branch
Biopesticides and Pollution Prevention
Division (7511P)



Rec# 483942

Conc

Please read instructions on reverse side before completing form. Form Approved. OMB No. 2070-0060. Approval expires 05-31-98

EPA	United States Environmental Protection Agency Washington, DC 20460	☐ Registration ☐ Amendment ☒ Other	OPP Identifier Number

Application for Pesticide – Section I

1. Company/Product Number	2. EPA Product Manager	3. Proposed Classification
89285-2	**Linda Hollis**	☒ None ☐ Restricted
4. Company/Product (Name) **IRF135**	PM# **91/Biochemical/BPPD**	

5. Name And Address Of Applicant *(Include ZIP Code)*

Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

☐ *Check if this is a new address*

6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to:

EPA Reg. No. _____

Product Name _____

Section II

☐ Amendment – Explain below.
☐ Resubmission in response to Agency letter dated _____
☒ Notification – Explain below.
☐ Final Printed labels in response to Agency letter dated _____
☐ "Me Too" Application.
☐ Other – Explain Below.

Notification Accepted

Explanation: Use additional page(s) if necessary. (For section I and Section II.)
Notification to add alternate formulation sites.

Date: DEC 03 2013

Reviewer: C. Walsh

This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula for this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12

Section III

1. Material This Product Will Be Packaged In:

Child Resistant Packaging	Unit Packaging	Water Soluble Packaging	2. Type of Container
☐ Yes* ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☒ Metal ☒ Plastic ☐ Glass ☐ Paper ☐ Other (Specify) _____
***Certification must be submitted**	If "Yes" Unit Packaging wgt. / No. per Container	If "Yes" Unit Packaging wgt. / No. per Container	

3. Location of Net Contents Information	4. Size(S) Retail Container	5. Location of Label Directions
☒ Label ☐ Container	40 – 168 gallons	☒ On Label ☐ On Labeling accompanying product

6. Manner in Which Label is Affixed to Product ☒ Lithographed ☐ Pager glued ☐ Stenciled ☐ Other _____

Section IV

1. Contact Point *(Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)*

Name	Title	Telephone No. (Include Area Code)
Mel Graben / mgraben@isagro-usa.com	**Regulatory Manager**	**(919) 321-5203**

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

6. Date Application Received (Stamped)

2. Signature	3. Title	
	Regulatory Consultant / aroberts@tsgusa.com	
4. Typed Name **Amy Plato Roberts**	5. Date **October 14, 2013**	

EPA Form 8570-1 (Rev. 8-94) Previous editions are obsolete

Material Sent for Data Extraction

Reg. # 89285-2

Description: New Registration

☐ Material(s) Sent to Data Extraction Contractors:

- ☒ New Stamped Label Dated 9/26/2013
- ☐ Notification Dated _____
- ☐ New CSF(s) Dated _____
- ☐ Other: _____

☐ Decision #: _____

☐ Other Action/Comments: _____

_____

File this coversheet and attached materials in the jacket. It must be well organized and clipped together, NOT STAPLED. Then give the jacket with the coversheet and materials to staff in the Information Services Center (ISC) (Room S-4900). If a jacket is full or only available as an image, please file materials in a new jacket and bring it down to the (ISC). For further information please call 703-605-0716.

Reviewer: Gina Burnett

Phone: 703 6050513 Division: BPPD

Date: 9/30/2013

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division (7511P)
1200 Pennsylvania Avenue NW
Washington, DC 20460

EPA Reg. Number:	Date of Issuance:
89285-2	

Term of Issuance: **Unconditional**

Name of Pesticide Product:

IRF135

NOTICE OF PESTICIDE:

_X_ Registration

___ Reregistration
(under FIFRA, as amended)

Name and Address of Registrant (include ZIP Code):

Amy Plato Roberts
Isagro USA, Inc
P.O. Box 990
Hailey, ID 83333

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This registration does not eliminate the need for continual reassessment of the pesticide. If EPA determines at any time that additional data are required to maintain in effect an existing registration, the Agency will require submission of such data under section 3(c)(2)(B) of FIFRA. This product is unconditionally registered in accordance with FIFRA Sec. 3(c)(5) provided you:

1. Submit and/or cite all data required for registration of your product under FIFRA section 3(c)(5) when the Agency requires all registrants of similar products to submit such data.

2. Revise the EPA Registration Number to read, "EPA Reg. No. 89285-2."

3. Submit two (2) copies of the final printed labeling before you release the product for shipment. Refer to the A-79 enclosure for a further description of final printed labeling.

A stamped copy of the label is enclosed for your records.

Signature of Approving Official:	Date:
J. E. Farley Jr. for Robert McNally, Director, Biopesticides and Pollution Prevention Division	9/26/13

EPA Form 8570-6

IRF135

ACCEPTED
SEP 26 2013
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 89285-2

(Alternate Brand Name: "DOMINUS®")

Biopesticide for Agricultural Soil Treatment Use

A BROAD SPECTRUM PRE-PLANT SOIL BIOFUMIGANT FOR THE CONTROL OF CERTAIN SOIL BORNE FUNGI, NEMATODES, WEEDS and INSECTS

ACTIVE INGREDIENT:	
Allyl isothiocyanate	96.3%
OTHER INGREDIENTS:	3.7%
TOTAL:	100.0%

Contains 8.19 lbs. active ingredient (allyl isothiocyanate) per gallon. This product weighs 8.5 lbs. per gallon.

KEEP OUT OF REACH OF CHILDREN
DANGER

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail).

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, and then continue rinsing. • Call a poison control center or physician for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 minutes. • Call a poison control center of doctor for treatment advice.
If swallowed	• Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything to an unconscious person. • Call a poison control center or physician for treatment advice.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice
NOTE TO PHYSICIAN	
Probably mucosal damage may contraindicate the use of gastric lavage.	
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For Chemical Emergency Spill Leak Fire Exposure or Accident Call CHEMTREC Day or Night Domestic North America 800-424-9300 International 703-527-3883 (collect calls accepted).	

EPA Reg. No. (pending as File Symbol 89285-E) **EPA Est. No.** XXXXX-XXX-XXX
Net Contents:
(Batch Code/Lot No: *will be placed on the container*)
Manufactured for:
Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

Table of Contents

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed, absorbed through skin, or inhaled. Do not get in eyes, on skin or on clothing. Do not breathe vapor. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before use.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

When performing activities without the potential for liquid contact all handlers (including applicators) must wear:

- Coveralls worn over long sleeve shirt and long pants
- Chemical-resistant footwear plus socks
- Chemical-resistant (such as nitrile or butyl) gloves
- Protective eyewear
- Respirator (see below)

Where liquid contact is a potential all handlers (including mixers, loaders and applicators) in addition to the above listed PPE must wear an air purifying respirator with an organic-vapor removing cartridge with pre-filter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any N, R,

P or HE pre-filter.

When cleaning equipment, wear a chemical resistant apron.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard any clothing and or PPE that have been drenched or heavily contaminated with this product's concentrate. Do not reuse clothing or PPE that has been drenched or heavily contaminated.

ENGINEERING CONTROLS

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, the handler PPE requirements may be reduced or modified as specified in the WPS at 40 CFR Part 170.

USER SAFETY RECOMMENDATIONS

- Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

For terrestrial uses only. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash water or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirement specific to your State or Tribe, consult the State/Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. The requirements in this box apply to uses of this product that are covered by the Worker Protection Standard.

No instruction elsewhere on this labeling relieve user from complying with the requirements of the WPS.

For the entry restricted period and notification requirements, see the *Entry Restricted Period and Notification* section of this labeling. PPE for entry during the Entry Restricted Period that is permitted by this labeling is listed in the Personal Protective Equipment (PPE) section of this labeling.

Assure that labels and MSDS are on-site and readily available for employees to review.

ENTRY RESTRICTED PERIOD AND NOTIFICATION

Entry Restricted Period: Entry into the application block (including early entry that would otherwise be permitted under the WPS) by any person other than a correctly trained and PPE-equipped handler is PROHIBITED from the start of the application until 5 days after application is complete.

Notification: Notify workers of the application by warning them orally and by posting Biofumigant Treated Area signs. The sign must state:

1. "DANGER/PELIGROSO"
2. "Areas under (fumigation)(treatment). DO NOT ENTER/NO ENTRE"
3. Allyl Isothiocyanate biofumigant in use
4. Date and time of fumigation
5. Date and time entry restricted period is over
6. IRF135 and (*name of co-application*)
7. Name, address and telephone of applicator in charge

Post the Biofumigant Treated Area sign instead of the WPS sign for this application, but follow all WPS requirements pertaining to location, legibility, text size and sign size (40 CFR § 170.120).

Post Biofumigant Treated Area signs defining the fumigation buffer zone, at all entrances to the application block no sooner than 24 hours prior to application and remain in place until at least 24 hours from the start of the application; Signs placed at the corners or on the edges of the treated area must remain posted for at least 5 days (120 hours) from the start of the application, e.g. for no less than the duration of the entry restricted period.

TERMS USED IN THIS LABELING

Application Block: The area within the perimeter of the fumigated portion of a field (including furrows, irrigation ditches, and roadways). The perimeter of the application block is the border that connects the outermost edges of the total area treated with the biofumigant product.

Start of the Application: The time at which the biofumigant is first delivered/dispensed into the soil in the application block.

Application is Complete: The time at which the biofumigant has stopped being delivered/dispensed into the soil and the soil has been sealed; drip lines have been purged (if applicable).

Entry Restricted Period: This period begins at the start of the application and expires depending on the application method and if tarps are used when the tarps are perforated and removed. Entry into the application block during this period is only allowed for appropriately PPE-equipped handlers performing handling tasks. See the *Entry Restricted Period* and *Notification* sections of this label for additional information.

Buffer Zone: An area established around the perimeter of each application block. The buffer

zone must extend outward from the edge of the application block perimeter equally in all directions.

Buffer Zone Period: Begins at the start of the application and lasts for a minimum of 24-hours after the application is complete. Non-handlers must be excluded from the buffer zone during the buffer zone period.

Roadway: The portion of a street or highway improved, designed or ordinarily used for vehicular travel, exclusive of the sidewalk or shoulder even if such a sidewalk or shoulder is used by persons riding bicycles. In the event that a highway includes two or more seperated roadways, the term *roadway* shall refer to any such roadway separately.

PRODUCT INFORMATION
Apply IRF135 as a preplant soil treatment only and as a part of an integrated pest management (IPM) program to aid in reducing or controlling the damaging effects of soil borne pests and diseases.

USE PRECAUTION
The product must only be used in a well-ventilated area. Do not use IRF135 if it cannot be applied according to the use patterns on the label.

APPLICATIN WITH OTHER PRODUCTS
IRF135 may be applied with other pesticides or fertilizers by co-injection or co-application via the application methods outlined in this label. Consult specific product labels for additional information or restrictions concerning mix partner compatibility. Treat a small area first to ensure compatibility. Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

SOIL TREATMENT APPLICATION METHODS
Apply as a preplant shank injection, broadcast/flat fume application, or raised bed application either shank injected into the row or in a raised bed or non-bedded strip injected through the drip irrigation system. Specific directions for each application method are provided below. Always follow label instructions to achieve optimum performance.

TARP REMOVAL, PERFORATION AND PLANTING INTERVAL
- Leave the soil undisturbed for at least 5 days after application is complete and prior to tarp cutting or perforation.
- For tarped applications, complete the cutting of the tarp or perforation/hole-punching 2 to 24 hours prior to tarp removal or planting to assist in IRF135 dissipation.
- Tarp cutters and removers shall wear long-sleeved shirt, long pants and gloves when removing tarps following application prior to planting.
- Cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure period.
- After application is complete, wait 10 days prior to planting.
- In addition to the 10 day waiting period, use of a Jar Seedling and/or Transplant tests for safety steps can be performed prior to planting the target crop. See page(s) 8-9 of this label for instructions.

SOIL TREATMENT TIMING AND APPLICATION RATES
- **Number of applications per year:** IRF135 may be applied to soil as a pre-plant soil

treatment prior to planting with subsequent applications allowable to the same soil within the same year provided the previous crop is completely harvested prior to application.

- **Open field:** Use 10 - 40 gallons of IRF135 per one acre (85 - 340 lb/A).
- **Greenhouse:** Use 10 - 40 gallons of IRF135 per one acre (85 - 340 lb/A) or 0.23 gal / 1,000ft^2 – 0.92 gal/1,000ft^2.

TABLE 1. PRE-PLANT SOIL APPLICATION RATES

TREATMENT SITE	BROADCAST EQUIVALENT RATES GAL/A*	BROADCAST EQUIVALENT RATES (LBS PRODUCT/A
Field soils to be planted to: Asparagus, brassica vegetables (broccoli, cauliflower), cereal grains, cucurbit crops (cucumber, squash, melons), fruiting vegetables (e.g. eggplant, peppers, tomatoes), herbs and spices, leek, leafy vegetables (lettuce), legume vegetables, pineapples, root and tuber vegetables (carrot, garlic, onion, potato, sweet potato)	10 - 40	85 - 340
Field soils to be planted to: Strawberries, berries (cane fruit) , fruit and nut crops, citrus, pome fruit trees, stone fruit trees, tree nuts, tropical and subtropical fruits, vineyards	10 - 40	85 - 340
Nursery, Turf, and Ornamental Soils to be planted to: Turf, lawns, parks, golf greens, athletic fields, recreational turf area, ornamentals, floral crops, forest tree seedlings	10 - 40	85 - 340
Greenhouse soils to be planted to: Food and Non-food crops	10 - 40	85 - 340
Seed or Transplant beds to be planted to:, Food crops and non-food crops	10 - 40	85 - 340
*Use the higher labeled rates for muck and heavy clay soils, as well as for those pests and or diseases such as cyst forming nematodes, *Macrophomina*, *Fusarium or Phytophthora* or hard coated weed seeds for example Malva, Clover or Nutsedge		

APPLICATION SITE CONDITION DIRECTIONS

Soil temperature: maximum of 90°F at a typical application depth

Soil preparation:

- Ensure the soil is well prepared and generally free at the surface of large clods. Large clods can prevent efficient soil sealing and reduce effectiveness of the product.
- Cultivate the soil to a minimum depth of 5-8" and/or equal to the desired treatment depth.

- Thoroughly incorporate plant residues into the soil to allow decomposition prior to treatment. Leave little or no plant residue present on the soil surface. Undecomposed plant material can harbor pests that will not be controlled and can interfere with the soil seal after application. Let crop residue that is present lie flat to permit the soil to be sealed effectively.
- Where applicable, fracture compacted soil layers (plow pans) within the desired treatment zone before or during application of IRF135.

Soil moisture:
- It is critical to maintain adequate soil moisture before, during and 48 hours post-treatment. Plan soil treatment for seasons, crop rotations, or irrigation schedules which leave adequate moisture in the soil.
- The soil must be moist (typically with enough moisture to allow weed seeds to become imbibed) from 1.5 inches below the soil surface to at least the minimum desired depth of the target treatment zone. The amount of moisture needed (typically greater than 50% Available Water Content at 9 inches) in this zone will vary according to soil type. Use the USDA Feel and Appearance Method (http://www.oneplan.org/Water/soilmoist.pdf) or a device that will accurately measure soil moisture. The surface soil generally dries very rapidly and is not considered in this determination.

Weather Conditions:
- Prior to soil treatment the weather forecast for the day of application and the 48-hour period following the soil treatment must be checked to determine if unfavorable weather conditions exist or are predicted (such as no wind speed or the potential for inversion layers) and whether soil treatment can begin.
- If significant rainfall occurs within 24 hours after IRF135 application (enough to saturate soil that has been treated with IRF135), a reduction in pest control can occur.
- Apply IRF135 in the presence of wind speeds of at least 2 mph at the start of the applications or projected to reach at least 5 mph during the application.
- Check weather forecasts 48 hours prior to application to ensure proper conditions are present at the time of application. Weather conditions and or advisories can be downloaded online at http://www.nws.noaa.gov.

Buffer Zones: Do not apply IRF135 within 25' of any occupied structure, such as a school, daycare, hospital, retirement home, business or residence.

PRE-PLANTING AFTER APPLICATION OF IRF135

Recontamination Prevention:
- IRF135 will control pests that are present in the soil treatment zone at the time of soil treatment. It will not control pests that are introduced into the soil after soil treatment period has ended. To avoid re-infestation of treated soil, DO NOT use irrigation water, transplants, seed pieces, or equipment that could carry soil-bome pests from infested land. Avoid contamination from moving infested soil onto treated beds through cultivation, movement of soil from outside the treated zone, dumping contaminated soil in treated fields and soil contamination from equipment or crop remains. Clean equipment carefully before entering treated fields.

Testing of Treated Soils Prior to Planting:
- Allow IRF135 to dissipate completely before planting the crop.

- When determining the appropriate time interval before planting, consideration of factors that impact IRF135 dissipation include rate of application, depth of injection, soil temperature, soil preparation and type, soil moisture and use of various plastic films and or water sealing.
- Use of a lettuce seed and or tomato/pepper transplant test can be used to determine if sufficient time has elapsed between soil treatment and planting as described below.

Lettuce Seed Test

- After a minimum of 7 days after application proceed with the following Seed Jar test.
- Use a trowel to dig into the treated soil to a depth at or just beneath the depth of IRF135 injection and remove 2 to 5 samples with enough soil to fill a quart sized jar half-way, mix lightly, apply moisture enough to germinate seeds, sprinkle seeds evenly over the soil surface and seal immediately with a lid for air tight conditions.
- Sample the field in several areas, especially those areas that are not representative of the general field conditions and or having higher moisture content, different soil texture or areas where rate delivery is different.
- Prepare another similar sample of untreated soil for comparison.
- Keep the jars out of direct sunlight and at a temperature of 65° to 85°F. (Direct sunlight can overheat and kill the seedlings). Lettuce seed will not germinate in the dark so place in diffuse sunlight.
- After 1 to 3 days, check each jar for seed germination.
- If seeds in the treated jar germinate and grow similar to the untreated soil sample then the treated area is safe for planting.

Tomato/Pepper Transplant Test

- After a minimum of 7 days after application proceed with the following transplant test.
- Transplant 5 to 10 healthy, actively growing tomato or pepper seedlings into treated beds at normal planting depth and several locations within the treated area. If available repeat in an area of field *not treated* with IRF135 for comparison. If a wetter, heavier area of the treated field is available place the transplants there.
- Inspect the transplants in 3 days for plant injury including wilt, chlorosis, or leaf and root tip burn. Ensure that proper soil moisture conditions exist for transplants to remain free from water stress. If plants in the treated area are asymptomatic and or are similar in growth and appearance to plants in the non-treated area it is safe to plant.

IRF135 DRIP (TRICKLE) CHEMIGATION APPLICATION USE DIRECTIONS:

Drip (Trickle) Chemigation Use Precautions:

- The following applies to drip (trickle) irrigation systems.
- Crop injury and a reduction in efficacy can result from non-uniform distribution of IRF135 in irrigation water used to treat soil.
- For questions related to equipment calibration, consult your local State Extension Service specialist, equipment manufacturer or dealer.

Soil preparation:

- Ensure compacted soil layers (plow pans) within the desired treatment zone are tilled and/or fractured if it is considered normal practice before application of IRF135 to ensure adequate soil drainage. Note that conditions where soil layers (plowpans) exist and are not tilled can result in reduced pest control, differences in planting interval or plant

growth as a result of compacted or shallow soil conditions.

- The application site must be in seedbed condition. Ensure beds are listed, shaped and ready for planting.
- Ensure initial soil moisture is at ~50% of field capacity at 2 to 3 inches and down to 9 inches depth at the time of IRF135 application. Soil texture and amount of water to be applied will impact the desired initial % field capacity necessary for drip injection.

IRF135 Dosage:

- Determining IRF135 dosage is based on consideration of the intended crop to be planted, treated area conditions, preparation, application method, target pest, and soil type.
- Use drip emitters with spacing of 4 to 12 inches with shallow subsurface placement to ensure thorough wetting of the soil area being treated by IRF135 drip injection.
- IRF135 must be metered at a target concentration between - 1000 – 3000 ppm (calculated by: total volume of product to be applied / total amount of water to be applied) x 1,000,000 into the water supply line and passed through a mixing device such as a centrifugal pump with by-pass agitation or static mixer to assure proper agitation and mixing to a target concentration (ppm) for even distribution before distribution into the drip irrigation system. The concentration of IRF135 should not exceed 3000 ppm at any time during the injection period within the drip line.
- The volume of irrigation water to deliver to the treated area is dependent upon the soil type, % soil moisture or the % of field capacity at the start of the application and the target moisture level following application and equipment rising.
- Determine the irrigation water flow and adjust the flow rate of IRF135 to meet the target ppm in irrigation water. Insert a static mixer or similar device immediately after the IRF135 injection point to insure adequate mixing with the irrigation water.

Chemigation Application Information:

1. Apply this product only through drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
2. Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
3. If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers or other experts.
4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
5. A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Chemigation Systems Connected to Public Water Systems:

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap)

between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

Equipment Considerations for Drip (Trickle) Chemigation Systems:

1. The irrigation system (main line, headers, and drip tape) must be thoroughly inspected for leaks before the application starts. The leak detection process requires that the irrigations system be at full operating pressure. The time required at full operating pressure will vary according to the system design and layout, soil type and target ppm concentration. Signs of leaks may include puddling along major pipes and at the top or ends of rows and/or on the bed surface or movement or shifting of beds due to bed collapse in over saturated conditions. Any leaks discovered must be repaired prior to application of IRF135. For leaks discovered during application of IRF135, immediately stop injection, wear all appropriate PPE and repair the line insuring that the problem is corrected before commencing with the drip applied injection.
2. The system must contain a functional check valve (back flow prevention device), vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
4. With use of injection pumps (e.g. Diaphragm or Centrifugal type pumps) the pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
7. To inject IRF135, use a metering device (such as a positive pressure system, positive displacement injection pump, diaphragm pump, or a Venturi system) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
8. Use of an inert gas such as nitrogen or dry compressed air is acceptable for use in a positive pressure system.

Injection System Flush After IRF135 Application:

- **After IRF135 injection, continue drip irrigation with clean water to flush remaining IRF135 completely out of the system.** Apply 3 times the volume of water equivalent to the capacity of the drip injection system from the point of injection to the ends of the drip tape to ensure IRF135 is completely voided from the injection lines and drip tape.
- Do not allow any IRF135 to remain in the system after application.
- If common lines are used for both the IRF135 application and to apply the water seal (if applied), the lines must be adequately flushed before starting the water seal and/or normal irrigation practices.

Soil Sealing or Tarp Use:

- When tarps are used with drip injection application, they must be in place prior to

injection of IRF135.
- Tarp edges must be buried along the row furrow and at the ends of each row.

***Untarped* Drip (Trickle) Chemigation Applications:**
- Tarps must be used unless the drip tape is buried a minimum of 5 inches below the soil/air interface.

Planting Interval for Raised Bed Drip Applications:
- After application, leave the soil undisturbed for at least 10 days after the application is complete. Planting of the target crop is allowed at a minimum of 10 days following the completion of the application.
- Extremely cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure and/or aeration period.
- For tarped applications, where tarp perforation or hole punching occurs allow 2 to 24 hours aeration prior to planting to assist in IRF135 dissipation.
- Use of a Jar Seedling and/or Transplant test for crop safety can be performed prior to planting the target crop. See pages XX-XX of this label for instructions.

Requirements for Greenhouse Soil Treatment

- Applications methods for use in greenhouse soil treatment may be applied as drip injection or tractor mounted shank where applicable according to the methods described for open field with exceptions listed below:
    - All applications must be tarped or double water sealed (delivered via overhead sprinkler). Double water sealed is defined as twice the amount of water to deliver the soil treatment without causing over saturation of the soil or delivering enough water to maintain up to 80% soil moisture for 24 hours following application.
    - During the application, keep doors, vents and windows to the outside open and keep fans or other mechanical ventilation systems running within the application area.
    - Areas by which gases could enter adjacent enclosed areas must be sealed prior to application and remain closed for up to 48 hours post application.

IRF135 TRACTOR MOUNTED SHANK RAISED BED AND BROADCAST/FLAT FUME APPLICATION USE DIRECTIONS:

Soil moisture:
- For tractor mounted shank applied treatments of IRF135 do not apply to dry soils. Target a soil moisture reading of ~50% or greater Available Water Content to a depth of 8 to 9 inches present for at least 24 to 48 hours prior to and until the start of the application.

Soil temperature at application:
- Maximum of 90°F at application depth.

Application Methods and Equipment:
- Apply IRF135 using chisels spaced no more than 12 inches apart and no more than 3 outlets evenly spaced per chisel (rear and forward facing type shank). The top most outlets must be no less than 5 inches from the final air soil interface.
- For shank applications the use of tarps or a water cap does not eliminate the need to remove chisel traces. Use of a press board, ring roller or other device to effectively close

chisel traces must be performed.

Application Depth:

- The point of injection must be a minimum of 5 inches from the final soil/air interface. The point of deep injection must be at a minimum of 18 inches from the final soil/air interface. Use deeper placement when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests.

Application Type	Injection depth	Single Sweep Chisel Spacing	Noble Plow Injector Outlet Spacing	Yetter Rig Injector Spacing	Tarped Type Sealing, Applied immediately after application*	Non-Tarped Type Sealing
Broadcast Shallow Shank	5 – 15 inches	6 – 12 inches Use of no more than 3 nozzles per sweep with 4-5 inches / nozzle and bottom nozzle at no more than 15 inches from soil surface	6 – 12 inches	4 – 6 inches	PE, VIF, TIF	Overhead sprinkler, water cap and/or Roller/Packer to compact soil surface, and close chisel traces
Broadcast Deep Shank	> 17 inches	18 – 24inches	NA	NA	NA	Roller/packer to compact soil surface
Raised Bed shallow shank or Strip Application	8 – 15 inches	6 – 12 inches Use of no more than 3 nozzles per sweep with 4 – 5 inches / nozzle and bottom nozzle at no more than 15 inches from soil surface	NA	4 – 6 inches	PE, VIF, TIF	Overhead Sprinkler, water cap and/or Roller/Packer to compact soil surface, and close chisel traces

* PE = Polyethylene film; VIF = Virtually Impermeable Film; TIF = Totally Impermeable Film

Prevention of End Row Spillage:

- Do not apply or allow IRF135 to spill onto the soil surface. Each injection line either needs a check valve located as close as possible to the soil injection point to avoid dripping or spillage. If a check valve system is not in place purge and drain the injection line prior to lifting the injection shanks from the ground.
- Only lift the injection shanks from the ground when the shut-off valve has been closed, and the IRF135 injection line has been depressurized to passively drain remaining IRF135 or when the system has been actively purged (e.g. via air compressor).

Injection Rig Calibration, Set-up, Repair, and Maintenance:

- IRF135 application equipment must be calibrated and all control systems working properly. Proper calibration is critical to ensure IRF135 application rate and soil placement. Refer to the equipment manufacturer's instructions to properly calibrate the injection equipment. The equipment dealer, local Cooperative Extension Service, crop advisor or IRF135 dealer can provide assistance.
- Flush all equipment with water after each day's use; disassemble valves and clean carefully. All rinsate should be properly applied to the field.

Planting Interval for Raised Bed Shank and Broadcast/Flat Fume Application

- After application, leave the soil undisturbed for at least 5 days after application prior to tarp cutting or perforation/hole punching.
- For tarped applications, complete cutting of the tarp for removal or perforation/hole punching 2 to 24 hours prior to tarp removal or planting to assist in IRF135 dissipation.
- Tarp cutters and removers shall wear long-sleeved shirt, long pants and gloves when there is no waiting or aeration period between tarp cutting and removing the tarp following application and prior to planting.
- Soil can be planted with the target crop at a minimum of 10 days following application.
- Cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure and or aeration period.
- Soil applied under untarped shanked applications must remain undisturbed for a minimum of 10 days following completion of the application before tillage and or planting of the target crop.
- Use of a Jar Seedling and/or Transplant test for crop safety can be performed prior to planting the target crop. See pages 8-9 of this label for instructions.

PESTS CONTROLLED FROM SOIL TREATMENT USES

Nematodes

Common Name (if applicable)	Scientific Name
Pin nematode	*Paratylenchus*
Ring nematode	*Mesocriconema* (=*Criconemoides*, =*Criconemella*)
Root knot nematode	*Meloidogyne*
Root-lesion nematode	*Pratylenchus*
Spiral nematode	*Helicotylenchus*
Sting nematode	*Belonolaimus*
Stubby-root nematode	*Paratrichodorus*
Stem and bulb nematode	*Tylenchus*

Soil Borne Fungi

Common Name (if applicable)	Scientific Name
Armillaria root rot	*Armillaria mellea*
Charcoal rot	*Macrophomina phaseolina*
Clubroot organism	*Plasmodiophora*
Corky root	*Pyrenochaeta*
Fusarium wilt	*Fusarium spp.*
Phytophthora	*Phytophthora spp.*
Pythium	*Pythium spp.*
Rhizoctonia	*Rhizoctonia spp.*
Southern blight	*Sclerotium rolfsii*
Verticillium wilt	*Verticillium dahliae*

Insects in the Soil at the Time of Treatment

Common Name (if applicable)	Scientific Name (if applicable)
Cutworms	
Japanese beetles	
June beetles and larva	
Symphylan (centipedes)	
White grubs	
Wireworms	

Weeds

Common Name (if applicable)	Scientific Name
California burclover	*Medicago lupulina*
Common chickweed	*Stellaria media*
Common mallow	*Malva neglecta*
Common purslane	*Portulaca oleracea*
Field bindweed	*Convolvulus arvensis*
Grasses	
Morningglory spp.	*Ipomoea spp.*
Prostrate knotweed	*Polygonum aviculare*
Yellow nutsedge	*Cyperus esculentus*

Mollusks: Slugs and Snails.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

PESTICIDE STORAGE
Store in original container in a cool, dry place.

PESTICIDE DISPOSAL
Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL for non-refillable containers
This is a non-refillable container. Do not reuse or refill this container. Empty the package

completely and triple rinse container (or equivalent pressure rinse) promptly after emptying with water to be used for application. Then dispose of the empty container according to state and local regulations. Place in trash or offer for recycling if available or return it to the Seller, or, if allowed by state and local authorities, by burning. If burned stay out of smoke.

TRIPLE RINSING INSTRUCTIONS:
For rigid, nonrefillable containers small enough to shake (with capacities equal to or less than 5 gallons):
Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container one-fourth full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

For rigid, non-refillable containers that are too large to shake (with capacities greater than 5 gallons):
Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container one-fourth full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

PRESSURE RINSE PROCEDURE (all sizes):
Pressure rinse as follows: Empty the remaining contents into application equipment or a tank mix and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

CONTAINER DISPOSAL for rigid, refillable containers
Refillable container. Refill this container with IRF135 pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

LIMITATION OF WARRANTY AND LIABILITY
Read the entire label before using this product, including this Limitation of Warranty and Liability.

If the terms are not acceptable, return the product at once unopened for a refund of the purchase price.

This Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes set forth in the Directions for Use, subject to the inherent risks

described below, when used in accordance with the Directions for Use under normal conditions. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, ISAGRO MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Buyers and Users of this product must be aware that there are inherent unintended risks associated to the use of this product, independent from the control of Isagro. These risks include, but are not limited to, weather conditions, soil factors, moisture conditions, diseases, irrigation practices, condition of the crop at the time of application, materials which are present in the tank mix with this product or prior to the application of it, cultural practices or the manner of use or application, all risks which are impossible to eliminate. The Buyers and Users should be aware that these factors may cause: ineffectiveness of the product, reduction of harvested yield of the crop (entirely or partially), crop injury or injury to non-target crops or plants or to rotational crops caused by carryover in the soil, resistance of the target weeds to this product. Therefore additional care, treatment and expense are required to take the crop to harvest.

If the Buyer does not agree with the acceptance of these risks, then THE PRODUCT SHOULD NOT BE APPLIED. To the extent consistent with applicable law, by applying this product the Buyer acknowledges and accepts these inherent unintended risks and AGREES THAT ALL SUCH RISKS ASSOCIATED WITH THE APPLICATION AND USE ARE ASSUMED BY THE BUYER.

To the extent consistent with applicable law, ISAGRO or Seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product (including claims based in contract, negligence, strict liability, and other tort or otherwise). To the extent consistent with applicable law, the exclusive remedy of the User or Buyer and the exclusive Liability of Isagro or Seller shall be the return of the purchase price of the product, or at the election of Isagro or Seller, the replacement of the product.

To the extent consistent with applicable law, this Company does not warrant any product reformulated or repackaged from this product except in accordance with this Company's stewardship requirements and with express written permission from this Company.

Isagro or its Seller must have prompt notice of any claim so that an immediate inspection of Buyer's or User's can be made. To the extent consistent with applicable law, if Buyer and User do not notify Isagro or Seller of any claims, in proper time, it shall be barred from obtaining any remedy.

To the extent consistent with applicable law, Buyers and Users are deemed to have accepted the terms of this Limitation of Warranty and Liability, which may not be modified by any verbal or written agreement.

9/11/2013

Changes to EP label

~~ERP~~ ~~SRP~~ instead of ~~BFA~~ → before 5 days wear PPE, (not 48) after 5 days the law PPE

glossary

eyewear stepped up (see LRM)

FMP (is boilerplate)

Tarp handler PPE is reduce PPE → for removal: no mask, yes gloves, no eyewear

clarify worker vs handler

~~at app to bio pesticide~~
~~1) PPE for workers handlers who are tarp removal~~

UMY should include how to calculate ppm on Page 8

chemigation - drip vs chemigation vs drip injection

must use tarp (unless 17 inches deep injection) for surface drip Page 9

drip app need tarp
inject (not drip) no tarp

*no such thing as a drip injection it is one or another
(or do they have deep pipes in the field -)

- don't mix up shank & drip

fumigant in green house (not pre-plant)

Shank inject
flat ~~plant~~ fume inject
chemigation drip
chemigation injection?

what is a water cap (glossary)

do not preforate or cut or remove until 5 day

IRF135

(Alternate Brand Name: "Dominus")

For Agricultural and General Soil Treatment Use

A BROAD SPECTRUM MULTI-PURPOSE PRE-PLANT SOIL TREATMENT FOR THE CONTROL OF CERTAIN SOIL BORNE FUNGI, NEMATODES, WEEDS and INSECTS

ACTIVE INGREDIENT:
Allyl isothiocyanate 96.3%
OTHER INGREDIENTS: 3.7%
TOTAL: 100.0%
Contains 8.19 lbs. active ingredient (allyl isothiocyanate) per gallon. This product weighs 8.5 lbs. per gallon.

KEEP OUT OF REACH OF CHILDREN

DANGER

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail).

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, and then continue rinsing. • Call a poison control center or physician for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 minutes. • Call a poison control center of doctor for treatment advice.
If swallowed	• Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything to an unconscious person. • Call a poison control center or physician for treatment advice.
If Inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice
NOTE TO PHYSICIAN	
Probably mucosal damage may contraindicate the use of gastric lavage.	
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For Chemical Emergency Spill Leak Fire Exposure or Accident Call CHEMTREC Day or Night Domestic North America 800-424-9300 International 703-527-3883 (collect calls accepted).	

EPA Reg. No. (pending as File Symbol 89285-E) **EPA Est. No.** XXXXX-XXX-XXX
Net Contents:
(Batch Code/Lot No: *will be placed on the container***)**
Manufactured for:
Isagro **USA**, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

Comment [JG1]: One significant difference between this label and the conventional soil fumigants is the absence of emergency preparation instructions. The conventionals require that the person in charge of the application must make a plan for how they would respond to an emergency or incident.

For example, what do we want to happen if handlers experience sensory irritation? Are they supposed to stop the application?

Comment [JG2]: It may be more accurate to call this a fumigant. "Treatment" is a very broad term and doesn't really describe anything, whereas "fumigant" you know that a gas will be involved.

Comment [JG3]: FYI, the conventional soil fumigants are all Restricted Use Products.

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PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed, absorbed through skin, or inhaled. Do not get in eyes, on skin or on clothing. Do not breathe vapor. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before use.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

When performing activities without the potential for liquid contact all handlers (including applicators) must wear:

- Coveralls worn over long sleeve shirt and long pants
- Chemical-resistant footwear plus socks
- Chemical-resistant (such as nitrile or butyl) gloves
- Protective eyewear

Where liquid contact is a potential all handlers (including mixers, loaders and applicators) in addition to the above listed PPE must wearan air purifying respirator with an organic-vapor removing cartridge with pre-filter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any N, R, P or HE pre-filter.

When cleaning equipment, wear a chemical resistant apron.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard any clothing and or PPE that have been drenched or heavily contaminated with this product's concentrate. Do not reuse clothing or PPE that has been drenched or heavily contaminated.

ENGINEERING CONTROLS

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, the handler PPE requirements may be reduced or modified as specified in the WPS at 40 CFR Part 170.

USER SAFETY RECOMMENDATIONS

- Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

For terrestrial uses only. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash water or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirement specific to your State or Tribe, consult the State/Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of forty-eight (48) hours unless wearing appropriate PPE.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Protective eyewear
- Chemical-resistant gloves, (such as nitrile or butyl)
- Footwear plus socks

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

EXCEPTION: If the product is soil-injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

Comment [JG4]: For the conventional soil fumigants, we only allow handlers into the treated area and buffer zone during the entry restricted period.

Comment [JG5]: This is a little confusing. Since the soil is being treated, how can a worker enter the treated area without contacting the soil?

USE PRECAUTION

The product must only be used in a well-ventilated area. Do not use IRF135 if it cannot be applied according to the use patterns on the label.

USE DIRECTIONS

Apply IRF135 as a preplant soil treatment only and as part of an integrated pest management (IPM) program to aid in reducing or controlling the damaging effects of soil borne pests and diseases.

Soil Treatment Application Methods

Apply as a preplant shank injection, broadcast/flat fume application, or raised bed application either shank injected into the row or injected through the drip irrigation system. Specific

directions for each application method are provided below. Always follow label instructions to achieve optimum performance

- Application by Drip Injection - see pages XX-XX
- Application by Raised Bed Shank - see pages XX-XX
- Application by Broadcast/Flat Fume - see pages XX-XX

Tarp Removal, Perforation and Planting Interval

- After application, leave the soil undisturbed for at least 5 days after application is complete and prior to tarp cutting or perforation.
- For tarped applications, complete the cutting of the tarp or perforation/hole-punching 2 to 24 hours prior to tarp removal or planting to assist in IRF135 dissipation.
- Tarp cutters and removers shall wear long-sleeved shirt, long pants and gloves when removing tarps following application prior to planting.
- Cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure period.
- In addition to the 10 day waiting period use of a Jar Seedling and/or Transplant tests for safety steps can be performed prior to planting the target crop. See page(s) XX of this label for instructions.

General Soil Treatment Timing and Application Rates:

- **Number of applications per year:** IRF135 may be applied to soil as a pre-plant soil treatment prior to planting with subsequent applications allowable to the same soil within the same year provided the previous crop is completely harvested prior to application.
- **Open field:** Use 10 - 40 gallons of IRF135 per one acre (85 - 340 lb/A).
- **Greenhouse:** Use 10 - 40 gallons of IRF135 per one acre (85 - 340 lb/A) or 0.23gal / 1,000ft^2 – 0.92 gal/1,000ft^2.

TABLE 1. PREPLANT SOIL APPLICATION RATES

TREATMENT SITE	BROADCAST EQUIVALENT RATES GAL/A*	BROADCAST EQUIVALENT RATES (LBS PRODUCT/A
Field soils to be planted to: Asparagus, brassica vegetables (broccoli, cauliflower), cereal grains, cucurbit crops (cucumber, squash, melons), fruiting vegetables (e.g. eggplant, peppers, tomatoes), herbs and spices, leek, leafy vegetables (lettuce), legume vegetables, pineapples, root and tuber vegetables (carrot, garlic, onion, potato, sweet potato)	10 - 40	85 - 340
Field soils to be planted to: Strawberries, berries (cane fruit) , fruit and nut crops, citrus, pome fruit trees, stone fruit trees, tree nuts, tropical and subtropical fruits, vineyards	10 - 40	85 - 340

Nursery, Turf, and Ornamental Soils to be planted to: Turf, lawns, parks, golf greens, athletic fields, recreational turf area, ornamentals, floral crops, forest tree seedlings	10 - 40	85 - 340
Greenhouse soils to be planted to: Food and Non-food crops	10 - 40	85 - 340
Seed or Transplant beds to be planted to:, Food crops and non-food crops	10 - 40	85 - 340
*Use the higher labeled rates for muck and heavy clay soils, as well as for those pests and or diseases such as cyst forming nematodes, *Macrophomina, Fusarium* or *Phytophthora* or hard coated weed seeds for example Malva, Clover or Nutsedge		

APPLICATION SITE CONDITIONDIRECTIONS

Soil temperature: maximum of 90°F at application depth

Soil preparation:

- Ensure the soil is well prepared and generally free at the surface of large clods. Large clods can prevent efficient soil sealing and reduce effectiveness of the product.
- Cultivate the soil to a minimum depth of 5-8" and/or equal to the desired treatment depth.
- Thoroughly incorporate plant residues into the soil to allow decomposition prior to treatment. Leave little or no plant residue present on the soil surface. Undecomposed plant material can harbor pests that will not be controlled and can interfere with the soil seal after application. Let crop residue that is present lie flat to permit the soil to be sealed effectively.
- Where applicable, fracture compacted soil layers (plow pans) within the desired treatment zone before or during application of IRF135.
- **Deviation from the above soil preparation conditions can result in less than satisfactory results.**

Comment [JG6]: This implies that the soil prep directions are suggestions. For the conventional soil fumigants, the field prep directions are required and must be followed.

Soil moisture:

- It is critical to maintain adequate soil moisture before, during and 48 hours post-treatment. Plan soil treatment for seasons, crop rotations, or irrigation schedules which leave adequate moisture in the soil.
- The soil must be moist (typically with enough moisture to allow weed seeds to become imbibed) from 1.5 inches below the soil surface to at least the minimum desired depth of the target treatment zone. The amount of moisture needed (typically greater than 50% Available Water Content at 9 inches) in this zone will vary according to soil type. The surface soil generally dries very rapidly and is not considered in this determination.

Weather Conditions:

- Prior to soil treatment the weather forecast for the day of application and the 48-hour period following the soil treatment must be checked to determine if unfavorable weather conditions exist or are predicted and whether soil treatment should begin.
- Apply IRF135 in the presence of wind speeds of at least 2 mph at the start of the applications or projected to reach at least 5 mph during the application.

Comment [JG7]: Should or can? It seems like the wind speed language is a requirement, not a suggestion. Also, are there other conditions that would be unfavorable?

- Check weather forecasts 48 hours prior to application to ensure proper conditions are present at the time of application. Weather conditions and or advisories can be downloaded online at http://www.nws.noaa.gov.

Buffer Zones: Do not apply IRF135 within 25' of any occupied structure, such as a school, daycare, hospital, retirement home, business or residence.

Comment [JG8]: How do we know that 25' is an adequate buffer zone in the absence of volatility data and modeling?

Comment [JG9]: For the convenational soil fumigants, overlapping of BZs is not allowed when multiple field are using the same fumigant.

Is there a concern with AITC applications happening in adjacent fields?

Pre-Planting After Application of IRF135

Effects of Rain:

- If significant rainfall occurs within 24 hours after IRF135 application (enough to saturate soil that has been treated with IRF135), a reduction in pest control can occur.

Restricted Entry Period following Application:

- Do not enter the treated area until 48 hours after the application is completed.
- If entry is required within 48 hours after application only those persons wearing Personal Protective Equipment (see Agricultural Use Requirements box) and only for reasons of repairing tarp are allowed in the treated area.

Comment [JG10]: It would be clearer to stick with one term instead of having both REI and Restricted Entry Period on the label.

For the conventional soil fumigants, we replaced REI with an Entry Restricted Period. The ERP varied depending on if the application was tarped and if/when the tarp was perforated and removed.

Recontamination Prevention:

- IRF135 will control pests that are present in the soil treatment zone at the time of soil treatment. It will not control pests that are introduced into the soil after soil treatment period has ended. To avoid re-infestation of treated soil, DO NOT use irrigation water, transplants, seed pieces, or equipment that could carry soil-borne pests from infested land. Avoid contamination from moving infested soil onto treated beds through cultivation, movement of soil from outside the treated zone, dumping contaminated soil in treated fields and soil contamination from equipment or crop remains. Clean equipment carefully before entering treated fields.

Testing of Treated Soils Prior to Planting:

- Allow IRF135 to dissipate completely before planting the crop.
- When determining the appropriate time interval before planting, consideration of factors that impact IRF135 dissipation include rate of application, depth of injection, soil temperature, soil preparation and type, soil moisture and use of various plastic films and or water sealing.
- Use of a lettuce seed and or tomato/pepper transplant test can be used to determine if sufficient time has elapsed between soil treatment and planting as described below.

Lettuce Seed Test

- After a minimum of 7 days after application proceed with the following Seed Jar test.
- Use a trowel to dig into the treated soil to a depth at or just beneath the depth of IRF135 injection and remove 2 to 5 samples with enough soil to fill a quart sized jar half-way, mix lightly, apply moisture enough to germinate seeds, sprinkle seeds evenly over the soil surface and seal immediately with a lid for air tight conditions.
- Sample the field in several areas, especially those areas that are not representative of the general field conditions and or having higher moisture content, different soil texture or areas where rate delivery is different.
- Prepare another similar sample of untreated soil for comparison.

- Keep the jars out of direct sunlight and at a temperature of 65° to 85°F. (Direct sunlight can overheat and kill the seedlings). Lettuce seed will not germinate in the dark so place in diffuse sunlight.
- After 1 to 3 days, check each jar for seed germination.
- If seeds in the treated jar germinate and grow similar to the untreated soil sample then the treated area is safe for planting.

Tomato/Pepper Transplant Test

- After a minimum of 7 days after application proceed with the following transplant test.
- Transplant 5 to 10 healthy, actively growing tomato or pepper seedlings into treated beds at normal planting depth and several locations within the treated area. If available repeat in an area of field *not treated* with IRF135 for comparison. If a wetter, heavier area of the treated field is available place the transplants there.
- Inspect the transplants in 3 days for plant injury including wilt, chlorosis, or leaf and root tip burn. Ensure that proper soil moisture conditions exist for transplants to remain free from water stress. If plants in the treated area are asymptomatic and or are similar in growth and appearance to plants in the non-treated area it is safe to plant.

IRF135 DRIP INJECTION APPLICATION USE DIRECTIONS:

Drip Injection Use Precautions:

- The following applies to drip (trickle) irrigation systems.
- Crop injury and a reduction in efficacy can result from non-uniform distribution of IRF135 in irrigation water used to treat soil.
- For questions related to equipment calibration, consult your local State Extension Service specialist, equipment manufacturer or dealer.

Soil preparation:

- Ensure compacted soil layers (plow pans) within the desired treatment zone are tilled and/or fractured if it is considered normal practice before application of IRF135 to ensure adequate soil drainage. Note that conditions where soil layers (plowpans) exist and are not tilled can result in reduced pest control, differences in planting interval or plant growth as a result of compacted or shallow soil conditions.
- The application site must be in seedbed condition. Ensure beds are listed, shaped and ready for planting.
- Ensure initial soil moisture is at ~50% of field capacity at 2 to 3 inches and down to 9 inches depth at the time of IRF135 application. Soil texture and amount of water to be applied will impact the desired initial % field capacity necessary for drip injection.

IRF135 Dosage:

- Determining IRF135 dosage is based on consideration of the intended crop to be planted, treated area conditions, preparation, application method, target pest, and soil type.
- Use drip emitters with spacing of 6 to 12 inches with shallow subsurface placement to ensure thorough wetting of the soil area being treated by IRF135 drip injection.
- IRF135 must be metered at a target concentration between - 1000 – 3000 ppm into the water supply line and passed through a mixing device such as a centrifugal pump with by-pass agitation or static mixer to assure proper agitation and mixing to a target concentration (ppm) for even distribution before distribution into the drip irrigation

system. The concentration of IRF135 should not exceed – 3000 ppm at any time during the injection period within the drip line.

- The volume of irrigation water to deliver to the treated area is dependent upon the soil type, % soil moisture or the % of field capacity at the start of the application and the target moisture level following application and equipment rising.
- Determine the irrigation water flow and adjust the flow rate of IRF135 to meet the target ppm in irrigation water. Insert a static mixer or similar device immediately after the IRF135 injection point to insure adequate mixing with the irrigation water.

General Chemigation Application Information:

1. Apply this product only through drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
2. Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
3. If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers or other experts.
4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
5. A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Chemigation Systems Connected to Public Water Systems:

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

For Drip (Trickle) Chemigation Systems:

Comment [JG11]: It may be clearer to call this section something like "Equipment considerations for drip (trickle) chemigation systems".

1. The irrigation system (main line, headers, drip tape) must be thoroughly inspected for leaks before the application starts. The leak detection process requires that the irrigations system be at full operating pressure. The time required at full operating pressure will vary according to the system design and layout, soil type and target ppm concentration. Signs of leaks may include puddling along major pipes and at the top or ends of rows and/or on the bed surface or movement or shifting of beds due to bed collapse in over saturated conditions. Any leaks discovered must be repaired prior to application of IRF135. For leaks discovered during application of IRF135, immediately stop injection, wear all appropriate PPE and repair the line insuring that the problem is corrected before commencing with the drip applied injection.
2. The system must contain a functional check valve (back flow prevention device), vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check

valve to prevent the flow of fluid back toward the injection pump.

4. With use of injection pumps (e.g. Diaphragm or Centrifugal type pumps) the pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
7. To inject IRF135, use a metering device (such as a positive pressure system, positive displacement injection pump, diaphragm pump, or a Venturi system) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
8. Use of an inert gas such as nitrogen or dry compressed air is acceptable for use in a positive pressure system.

Injection System Flush After IRF135 Application:

- After IRF135 injection, continue drip irrigation with clean water to flush remaining IRF135 completely out of the system. Apply 3 times the volume of water equivalent to the capacity of the drip injection system from the point of injection to the ends of the drip tape to ensure IRF135 is completely voided from the injection lines and drip tape.
- Do not allow any IRF135 to remain in the system after application.
- If common lines are used for both the IRF135 application and to apply the water seal (if applied), the lines must be adequately flushed before starting the water seal and/or normal irrigation practices.

Soil Sealing or Tarp Use:

- When tarps are used with drip injection application, they must be in place prior to injection of IRF135.
- Tarp edges must be buried along the row furrow and at the ends of each row.

***Untarped* Drip Applications:**

- The drip tape must be buried a minimum of 5 inches below the soil/air interface.

Planting Interval for Raised Bed Drip Applications:

- After application, leave the soil undisturbed for at least 10 days after the application is complete. Planting of the target crop is allowed at a minimum of 10 days following the completion of the application.
- Extremely cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure and/or aeration period.
- For tarped applications, where tarp perforation or hole punching occurs allow 2 to 24 hours aeration prior to planting to assist in IRF135 dissipation.
- Use of a Jar Seedling and/or Transplant test for crop safety can be performed prior to planting the target crop. See pages XX-XX of this label for instructions.
-

Requirements for Pre-Plant Greenhouse Soil Treatment

Comment [JG12]: You may want to see the greenhouse requirements for the soil fumigant dazomet. http://iaspub.epa.gov/apex/pesticides/f?p=PPLS:8:10032852251707::NO::P8_PUID,P8_RINUM:19059,5481-9027

- Applications methods for use in greenhouse soil treatment may be applied as drip injection or tractor mounted shank where applicable according to the methods described for open field with exceptions listed below:
  - All applications must be tarped or double water sealed (delivered via overhead sprinkler)
  - During the application, keep doors, vents and windows to the outside open and keep fans or other mechanical ventilation systems running within the application area.
  - Areas by which gases could enter adjacent enclosed areas must be sealed prior to application and remain closed for up to 48hours post application.

IRF135 TRACTOR MOUNTED SHANK RAISED BED AND BROADCAST/FLAT APPLICATION USE DIRECTIONS:

Soil moisture:

- For tractor mounted shank applied treatments of IRF135 do not apply to dry soils. Target a soil moisture reading of ~50% or greater Available Water Content to a depth of 8 to 9 inches present for at least 24 to 48 hours prior to and until the start of the application.

Soil temperature at application:

- Maximum of 90°F at application depth.

Application Methods and Equipment:

- Apply IRF135 using chisels spaced no more than 12 inches apart and no more than 3 outlets evenly spaced per chisel (rear and forward facing type shank). The top most outlet must be no less than – 5 inches from the final air soil interface.
- For shank applications the use of tarps or a water cap does not eliminate the need to remove chisel traces. Use of a press board, ring roller or other device to effectively close chisel traces must be performed.

Application Depth:

- The point of injection must be a minimum of -5 inches from the final soil/air interface. The point of deep injection must be at a minimum of 18 inches from the final soil/air interface. Use deeper placement when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests.

Application Type	Injection depth	Single Sweep Chisel Spacing	Noble Plow Injector Outlet Spacing	Yetter Rig Injector Spacing	Tarped Type Sealing, Applied immediately after application*	Non-Tarped Type Sealing
Broadcast Shallow Shank	5-15 inches	6–12 inches Use of no	6–12 inches	4-6 inches	PE, VIF, TIF	Overhead sprinkler, water cap

		more than 3 nozzles per sweep with 4-5 inches / nozzle and bottom nozzle at no more than 15 inches from soil surface				and or Roller/Packer to compact soil surface, disc or similar equipment at a 3-4 inch depth to thoroughly mix soil and close chisel traces
Broadcast Deep Shank	>17 inches	18-24inches	NA	NA	NA	Roller/packer to compact soil surface
Raised Bed shallow shank or Strip Application	8–15 inches	6–12 inches Use of no more than 3 nozzles per sweep with 4-5 inches / nozzle and bottom nozzle at no more than 15 inches from soil surface	NA	4-6 inches	PE, VIF, TIF	Overhead Sprinkler, water cap and or Roller/Packer to compact soil surface, disc or similar equipment at a 3-4 inch depth to thoroughly mix soil and close chisel traces

* PE = Polyethylene film; VIF = Virtually Impermeable Film; TIF = Totally Impermeable Film

Prevention of End Row Spillage:

- Do not apply or allow IRF135 to spill onto the soil surface. Each injection line either needs a check valve located as close as possible to the soil injection point to avoid dripping or spillage. If a check valve system is not in place purge and drain the injection line prior to lifting the injection shanks from the ground.
- Only lift the injection shanks from the ground when the shut-off valve has been closed, and the IRF135 injection line has been depressurized to passively drain remaining IRF135 or when the system has been actively purged (e.g. via air compressor).

Injection Rig Calibration, Set-up, Repair, and Maintenance:
IRF135 application equipment must be calibrated and all control systems working properly. Proper calibration is critical to ensure IRF135 application rate and soil placement. Refer to the equipment manufacturer's instructions to properly calibrate the injection equipment. The equipment dealer, local Cooperative Extension Service, crop advisor or IRF135 dealer can provide assistance.

Planting Interval for Raised Bed Shank and Broadcast/Flat Application

- After application, leave the soil undisturbed for at least 5 days after application prior to tarp cutting or perforation/hole punching.
- For tarped applications, complete cutting of the tarp for removal or perforation/hole punching 2 to 24 hours prior to tarp removal or planting to assist in IRF135 dissipation.
- Tarp cutters and removers shall wear long-sleeved shirt, long pants and gloves when there is no waiting or aeration period between tarp cutting and removing the tarp following application and prior to planting.
- Soil can be planted with the target crop at a minimum of 10 days following application.
- Cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure and or aeration period.
- Soil applied under untarped shanked applications must remain undisturbed for a minimum of 10 days following completion of the application before tillage and or planting of the target crop.
- Use of a Jar Seedling and/or Transplant test for crop safety can be performed prior to planting the target crop. See pages XX-XX of this label for instructions.

Pests Controlled From Soil Treatment Uses:

Nematodes

Common Name (if applicable)	Scientific Name
Pin nematode	*Paratylenchus*
Ring nematode	*Mesocriconema* (=*Criconemoides*, =*Criconemella*)
Root knot nematode	*Meloidogyne*
Root-lesion nematode	*Pratylenchus*
Spiral nematode	*Helicotylenchus*
Sting nematode	*Belonolaimus*
Stubby-root nematode	*Paratrichodorus*
Stem and bulb nematode	*Tylenchus*

Soil Borne Fungi

Common Name (if applicable)	Scientific Name
Armillaria root rot	*Armillaria mellea*
Charcoal rot	*Macrophomina phaseolina*
Clubroot organism	*Plasmodiophora*
Corky root	*Pyrenochaeta*
Fusarium wilt	*Fusarium spp.*
	Phytophthora spp.
	Pythium spp.
	Rhizoctonia spp.
	Sclerotium rolfsii
Verticillium wilt	*Verticillium dahliae*

Insects in the Soil at the Time of Treatment

Common Name (if applicable)	Scientific Name (if applicable)
Cutworms	
Japanese beetles	

June beetles and larva	
Symphylan (centipedes)	
White grubs	
Wireworms	

Weeds

Common Name (if applicable)	Scientific Name
California burclover	*Medicago lupulina*
Common chickweed	*Stellaria media*
Common mallow	*Malva neglecta*
Common purslane	*Portulaca oleracea*
Field bindweed	*Convolvulus arvensis*
Grasses	
Morningglory spp.	*Ipomoea spp.*
Prostrate knotweed	*Polygonum aviculare*
Yellow nutsedge	*Cyperus esculentus*

Mollusks: Slugs and Snails.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

PESTICIDE STORAGE
Store in original container in a cool, dry place.

PESTICIDE DISPOSAL
Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL for non-refillable containers
This is a non-refillable container. Do not reuse or refill this container. Empty the package completely and triple rinse container (or equivalent pressure rinse) promptly after emptying with water to be used for application. Then dispose of the empty container according to state and local regulations. Place in trash or offer for recycling if available or return it to the Seller, or, if allowed by state and local authorities, by burning. If burned stay out of smoke.

TRIPLE RINSING INSTRUCTIONS:
For rigid, nonrefillable containers small enough to shake (with capacities equal to or less than 5 gallons):
Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container one-fourth full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

For rigid, non-refillable containers that are too large to shake (with capacities greater than 5 gallons):

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container one-fourth full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

PRESSURE RINSE **PROCEDURE (all sizes):**
Pressure rinse as follows: Empty the remaining contents into application equipment or a tank mix and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

CONTAINER DISPOSAL for rigid, refillable containers
Refillable container. Refill this container with IRF135 pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

LIMITATION OF WARRANTY AND LIABILITY
Read the entire label before using this product, including this Limitation of Warranty and Liability.

If the terms are not acceptable, return the product at once unopened for a refund of the purchase price.

This Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes set forth in the Directions for Use, subject to the inherent risks described below, when used in accordance with the Directions for Use under normal conditions.
TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, ISAGRO MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Buyers and Users of this product must be aware that there are inherent unintended risks associated to the use of this product, independent from the control of Isagro. These risks include, but are not limited to, weather conditions, soil factors, moisture conditions, diseases, irrigation practices, condition of the crop at the time of application, materials which are present in the tank mix with this product or prior to the application of it, cultural practices or the manner of use or application, all risks which are impossible to eliminate. The Buyers and Users should be aware that these factors may cause: ineffectiveness of the product, reduction of harvested yield of the crop (entirely or partially), crop injury or injury to non-target crops or plants or to rotational crops caused by carryover in the soil, resistance of the target weeds to this product. Therefore additional care, treatment and expense are required to take the crop to harvest.

If the Buyer does not agree with the acceptance of these risks, then THE PRODUCT SHOULD NOT BE APPLIED. To the extent consistent with applicable law, by applying this product the Buyer acknowledges and accepts these inherent unintended risks and AGREES THAT ALL SUCH RISKS ASSOCIATED WITH THE APPLICATION AND USE ARE ASSUMED BY THE BUYER.

To the extent consistent with applicable law, ISAGRO or Seller shall not be liable for any incidental,

consequential or special damages resulting from the use or handling of this product (including claims based in contract, negligence, strict liability, other tort or otherwise). To the extent consistent with applicable law, the exclusive remedy of the User or Buyer and the exclusive Liability of Isagro or Seller shall be the return of the purchase price of the product, or at the election of Isagro or Seller, the replacement of the product.

To the extent consistent with applicable law, this Company does not warrant any product reformulated or repackaged from this product except in accordance with this Company's stewardship requirements and with express written permission from this Company.

Isagro or its Seller must have prompt notice of any claim so that an immediate inspection of Buyer's or User's can be made. To the extent consistent with applicable law, if Buyer and User do not notify Isagro or Seller of any claims, in proper time, it shall be barred from obtaining any remedy.

To the extent consistent with applicable law, Buyers and Users are deemed to have accepted the terms of this Limitation of Warranty and Liability, which may not be modified by any verbal or written agreement.

IRF135

(Alternate Brand Name: "Dominus")

For Agricultural and General Soil Treatment Use

A BROAD SPECTRUM MULTI-PURPOSE PRE-PLANT SOIL TREATMENT FOR THE CONTROL OF CERTAIN SOIL BORNE FUNGI, NEMATODES, WEEDS and INSECTS

ACTIVE INGREDIENT:
Allyl isothiocyanate..... 96.3%
OTHER INGREDIENTS:..... 3.7%
TOTAL: 100.0%
Contains 8.19 lbs. active ingredient (allyl isothiocyanate) per gallon. This product weighs 8.5 lbs. per gallon.

KEEP OUT OF REACH OF CHILDREN

DANGER

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail).

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, and then continue rinsing. • Call a poison control center or physician for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 minutes. • Call a poison control center of doctor for treatment advice.
If swallowed	• Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything to an unconscious person. • Call a poison control center or physician for treatment advice.
If Inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice
NOTE TO PHYSICIAN	
Probably mucosal damage may contraindicate the use of gastric lavage.	
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For Chemical Emergency Spill Leak Fire Exposure or Accident Call CHEMTREC Day or Night Domestic North America 800-424-9300 International 703-527-3883 (collect calls accepted).	

EPA Reg. No. (pending as File Symbol 89285-E) **EPA Est. No.** XXXXX-XXX-XXX
Net Contents:
(Batch Code/Lot No: *will be placed on the container*)
Manufactured for:
Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed, absorbed through skin, or inhaled. Do not get in eyes, on skin or on clothing. Do not breathe vapor. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before use.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

When performing activities without the potential for liquid contact all handlers (including applicators) must wear:

- Coveralls worn over long sleeve shirt and long pants
- Chemical-resistant footwear plus socks
- Chemical-resistant (such as nitrile or butyl) gloves
- Protective eyewear

Where liquid contact is a potential all handlers (including mixers, loaders and applicators) in addition to the above listed PPE must wear an air purifying respirator with an organic-vapor removing cartridge with pre-filter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any N, R, P or HE pre-filter.

When cleaning equipment, wear a chemical resistant apron.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard any clothing and or PPE that have been drenched or heavily contaminated with this product's concentrate. Do not reuse clothing or PPE that has been drenched or heavily contaminated.

ENGINEERING CONTROLS

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, the handler PPE requirements may be reduced or modified as specified in the WPS at 40 CFR Part 170.

USER SAFETY RECOMMENDATIONS

- Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

For terrestrial uses only. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash water or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirement specific to your State or Tribe, consult the State/Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of ~~forty-eight (48)~~ 5 days hours unless wearing appropriate PPE.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Protective eyewear
- Chemical-resistant gloves, (such as nitrile or butyl)
- Footwear plus socks

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

EXCEPTION: If the product is soil-injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

USE PRECAUTION

The product must only be used in a well-ventilated area. Do not use IRF135 if it cannot be applied according to the use patterns on the label.

USE DIRECTIONS

Apply IRF135 as a preplant soil treatment only and as part of an integrated pest management (IPM) program to aid in reducing or controlling the damaging effects of soil borne pests and diseases.

Soil Treatment Application Methods

Apply as a preplant shank injection, broadcast/flat fume application, or raised bed application either shank injected into the row or injected through the drip irrigation system. Specific

directions for each application method are provided below. Always follow label instructions to achieve optimum performance

- Application by Drip Injection - see pages XX-XX
- Application by Raised Bed Shank - see pages XX-XX
- Application by Broadcast/Flat Fume - see pages XX-XX

Tarp Removal, Perforation and Planting Interval

- After application, leave the soil undisturbed for at least 5 days after application is complete and prior to tarp cutting or perforation.
- For tarped applications, complete the cutting of the tarp or perforation/hole-punching 2 to 24 hours prior to tarp removal or planting to assist in IRF135 dissipation.
- Tarp cutters and removers shall wear long-sleeved shirt, long pants and gloves when removing tarps following application prior to planting.
- Cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure period.
- In addition to the 10 day waiting period use of a Jar Seedling and/or Transplant tests for safety steps can be performed prior to planting the target crop. See page(s) XX of this label for instructions.

General Soil Treatment Timing and Application Rates:

- **Number of applications per year:** IRF135 may be applied to soil as a pre-plant soil treatment prior to planting with subsequent applications allowable to the same soil within the same year provided the previous crop is completely harvested prior to application.
- **Open field:** Use 10 - 40 gallons of IRF135 per one acre (85 - 340 lb/A).
- **Greenhouse:** Use 10 - 40 gallons of IRF135 per one acre (85 - 340 lb/A) or 0.23gal / 1,000ft^2 – 0.92 gal/1,000ft^2.

TABLE 1. PREPLANT SOIL APPLICATION RATES

TREATMENT SITE	BROADCAST EQUIVALENT RATES GAL/A*	BROADCAST EQUIVALENT RATES (LBS PRODUCT/A
Field soils to be planted to: Asparagus, brassica vegetables (broccoli, cauliflower), cereal grains, cucurbit crops (cucumber, squash, melons), fruiting vegetables (e.g. eggplant, peppers, tomatoes), herbs and spices, leek, leafy vegetables (lettuce), legume vegetables, pineapples, root and tuber vegetables (carrot, garlic, onion, potato, sweet potato)	10 - 40	85 - 340
Field soils to be planted to: Strawberries, berries (cane fruit) , fruit and nut crops, citrus, pome fruit trees, stone fruit trees, tree nuts, tropical and subtropical fruits, vineyards	10 - 40	85 - 340

Nursery, Turf, and Ornamental Soils to be planted to: Turf, lawns, parks, golf greens, athletic fields, recreational turf area, ornamentals, floral crops, forest tree seedlings	10 - 40	85 - 340
Greenhouse soils to be planted to: Food and Non-food crops	10 - 40	85 - 340
Seed or Transplant beds to be planted to:, Food crops and non-food crops	10 - 40	85 - 340
*Use the higher labeled rates for muck and heavy clay soils, as well as for those pests and or diseases such as cyst forming nematodes, *Macrophomina, Fusarium or Phytophthora* or hard coated weed seeds for example Malva, Clover or Nutsedge		

APPLICATION SITE CONDITIONDIRECTIONS

GAPs

Soil temperature: maximum of 90°F at application depth — Need to measure/record?

Soil preparation:

- Ensure the soil is well prepared and generally free at the surface of large clods. Large clods can prevent efficient soil sealing and reduce effectiveness of the product.
- Cultivate the soil to a minimum depth of 5-8" and/or equal to the desired treatment depth.
- Thoroughly incorporate plant residues into the soil to allow decomposition prior to treatment. Leave little or no plant residue present on the soil surface. Undecomposed plant material can harbor pests that will not be controlled and can interfere with the soil seal after application. Let crop residue that is present lie flat to permit the soil to be sealed effectively.
- Where applicable, fracture compacted soil layers (plow pans) within the desired treatment zone before or during application of IRF135.
- **Deviation from the above soil preparation conditions can result in less than satisfactory results**.

Soil moisture:

- It is critical to maintain adequate soil moisture before, during and 48 hours post-treatment. Plan soil treatment for seasons, crop rotations, or irrigation schedules which leave adequate moisture in the soil.
- The soil must be moist (typically with enough moisture to allow weed seeds to become imbibed) from 1.5 inches below the soil surface to at least the minimum desired depth of the target treatment zone. The amount of moisture needed (typically greater than 50% Available Water Content at 9 inches) in this zone will vary according to soil type. The surface soil generally dries very rapidly and is not considered in this determination.

as measured by ...

Weather Conditions:

- Prior to soil treatment the weather forecast for the day of application and the 48-hour period following the soil treatment must be checked to determine if unfavorable weather conditions exist or are predicted and whether soil treatment should begin.
- Apply IRF135 in the presence of wind speeds of at least 2 mph at the start of the applications or projected to reach at least 5 mph during the application.

specify

- Check weather forecasts 48 hours prior to application to ensure proper conditions are present at the time of application. Weather conditions and or advisories can be downloaded online at http://www.nws.noaa.gov.

Buffer Zones: Do not apply IRF135 within 25' of any occupied structure, such as a school, daycare, hospital, retirement home, business or residence.

Pre-Planting After Application of IRF135

Effects of Rain:

- If significant rainfall occurs within 24 hours after IRF135 application (enough to saturate soil that has been treated with IRF135), a reduction in pest control can occur.

Restricted Entry Period following Application:

- Do not enter the treated area until 48 hours after the application is completed.
- If entry is required within 48 hours after application only those persons wearing Personal Protective Equipment (see Agricultural Use Requirements box) and only for reasons of repairing tarp are allowed in the treated area.

Recontamination Prevention:

- IRF135 will control pests that are present in the soil treatment zone at the time of soil treatment. It will not control pests that are introduced into the soil after soil treatment period has ended. To avoid re-infestation of treated soil, DO NOT use irrigation water, transplants, seed pieces, or equipment that could carry soil-borne pests from infested land. Avoid contamination from moving infested soil onto treated beds through cultivation, movement of soil from outside the treated zone, dumping contaminated soil in treated fields and soil contamination from equipment or crop remains. Clean equipment carefully before entering treated fields.

Testing of Treated Soils Prior to Planting:

- Allow IRF135 to dissipate completely before planting the crop.
- When determining the appropriate time interval before planting, consideration of factors that impact IRF135 dissipation include rate of application, depth of injection, soil temperature, soil preparation and type, soil moisture and use of various plastic films and or water sealing.
- Use of a lettuce seed and or tomato/pepper transplant test can be used to determine if sufficient time has elapsed between soil treatment and planting as described below.

Lettuce Seed Test

- After a minimum of 7 days after application proceed with the following Seed Jar test.
- Use a trowel to dig into the treated soil to a depth at or just beneath the depth of IRF135 injection and remove 2 to 5 samples with enough soil to fill a quart sized jar half-way, mix lightly, apply moisture enough to germinate seeds, sprinkle seeds evenly over the soil surface and seal immediately with a lid for air tight conditions.
- Sample the field in several areas, especially those areas that are not representative of the general field conditions and or having higher moisture content, different soil texture or areas where rate delivery is different.
- Prepare another similar sample of untreated soil for comparison.

- Keep the jars out of direct sunlight and at a temperature of 65° to 85°F. (Direct sunlight can overheat and kill the seedlings). Lettuce seed will not germinate in the dark so place in diffuse sunlight.
- After 1 to 3 days, check each jar for seed germination.
- If seeds in the treated jar germinate and grow similar to the untreated soil sample then the treated area is safe for planting.

Tomato/Pepper Transplant Test

- After a minimum of 7 days after application proceed with the following transplant test.
- Transplant 5 to 10 healthy, actively growing tomato or pepper seedlings into treated beds at normal planting depth and several locations within the treated area. If available repeat in an area of field *not treated* with IRF135 for comparison. If a wetter, heavier area of the treated field is available place the transplants there.
- Inspect the transplants in 3 days for plant injury including wilt, chlorosis, or leaf and root tip burn. Ensure that proper soil moisture conditions exist for transplants to remain free from water stress. If plants in the treated area are asymptomatic and or are similar in growth and appearance to plants in the non-treated area it is safe to plant.

IRF135 DRIP INJECTION APPLICATION USE DIRECTIONS:

Instructions for tarped v. untarped drip applications

Drip Injection Use Precautions:

- The following applies to drip (trickle) irrigation systems.
- Crop injury and a reduction in efficacy can result from non-uniform distribution of IRF135 in irrigation water used to treat soil.
- For questions related to equipment calibration, consult your local State Extension Service specialist, equipment manufacturer or dealer.

Soil preparation:

- Ensure compacted soil layers (plow pans) within the desired treatment zone are tilled and/or fractured if it is considered normal practice before application of IRF135 to ensure adequate soil drainage. Note that conditions where soil layers (plowpans) exist and are not tilled can result in reduced pest control, differences in planting interval or plant growth as a result of compacted or shallow soil conditions.
- The application site must be in seedbed condition. Ensure beds are listed, shaped and ready for planting.
- Ensure initial soil moisture is at ~50% of field capacity at 2 to 3 inches and down to 9 inches depth at the time of IRF135 application. Soil texture and amount of water to be applied will impact the desired initial % field capacity necessary for drip injection.

IRF135 Dosage:

- Determining IRF135 dosage is based on consideration of the intended crop to be planted, treated area conditions, preparation, application method, target pest, and soil type.
- Use drip emitters with spacing of 6 to 12 inches with shallow subsurface placement to ensure thorough wetting of the soil area being treated by IRF135 drip injection.
- IRF135 must be metered at a target concentration between - 1000 – 3000 ppm into the water supply line and passed through a mixing device such as a centrifugal pump with by-pass agitation or static mixer to assure proper agitation and mixing to a target concentration (ppm) for even distribution before distribution into the drip irrigation

include how to calculate ppm

system. The concentration of IRF135 should not exceed – 3000 ppm at any time during the injection period within the drip line.

- The volume of irrigation water to deliver to the treated area is dependent upon the soil type, % soil moisture or the % of field capacity at the start of the application and the target moisture level following application and equipment rising.
- Determine the irrigation water flow and adjust the flow rate of IRF135 to meet the target ppm in irrigation water. Insert a static mixer or similar device immediately after the IRF135 injection point to insure adequate mixing with the irrigation water.

General Chemigation Application Information:

1. Apply this product only through drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
2. Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
3. If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers or other experts.
4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place. See below
5. A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Chemigation Systems Connected to Public Water Systems:

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

The whole section is for drip, right?

For Drip (Trickle) Chemigation Systems:

1. The irrigation system (main line, headers, drip tape) must be thoroughly inspected for leaks before the application starts. The leak detection process requires that the irrigations system be at full operating pressure. The time required at full operating pressure will vary according to the system design and layout, soil type and target ppm concentration. Signs of leaks may include puddling along major pipes and at the top or ends of rows and/or on the bed surface or movement or shifting of beds due to bed collapse in over saturated conditions. Any leaks discovered must be repaired prior to application of IRF135. For leaks discovered during application of IRF135, immediately stop injection, wear all appropriate PPE and repair the line insuring that the problem is corrected before commencing with the drip applied injection.
2. The system must contain a functional check valve (back flow prevention device), vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check

valve to prevent the flow of fluid back toward the injection pump.

4. With use of injection pumps (e.g. Diaphragm or Centrifugal type pumps) the pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
7. To inject IRF135, use a metering device (such as a positive pressure system, positive displacement injection pump, diaphragm pump, or a Venturi system) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
8. Use of an inert gas such as nitrogen or dry compressed air is acceptable for use in a positive pressure system.

Injection System Flush After IRF135 Application:

- After IRF135 injection, continue drip irrigation with clean water to flush remaining IRF135 completely out of the system. Apply 3 times the volume of water equivalent to the capacity of the drip injection system from the point of injection to the ends of the drip tape to ensure IRF135 is completely voided from the injection lines and drip tape.
- Do not allow any IRF135 to remain in the system after application.
- If common lines are used for both the IRF135 application and to apply the water seal (if applied), the lines must be adequately flushed before starting the water seal and/or normal irrigation practices.

Soil Sealing or Tarp Use:

- When tarps are used with drip injection application, they must be in place prior to injection of IRF135.
- Tarp edges must be buried along the row furrow and at the ends of each row.

***Untarped* Drip Applications:**

- The drip tape must be buried a minimum of 5 inches below the soil/air interface.

Planting Interval for Raised Bed Drip Applications:

- After application, leave the ~~soil undisturbed~~ for at least 10 days after the application is complete. Planting of the target crop is allowed at a minimum of 10 days following the completion of the application.
- Extremely cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure and/or aeration period.
- For tarped applications, where tarp perforation or hole punching occurs allow 2 to 24 hours aeration prior to planting to assist in IRF135 dissipation.
- Use of a Jar Seedling and/or Transplant test for crop safety can be performed prior to planting the target crop. See pages XX-XX of this label for instructions.
- .

Requirements for Pre-Plant Greenhouse Soil Treatment

- Applications methods for use in greenhouse soil treatment may be applied as drip injection or tractor mounted shank where applicable according to the methods described for open field with exceptions listed below:
  - All applications must be tarped or double water sealed (delivered via overhead sprinkler)
  - During the application, keep doors, vents and windows to the outside open and keep fans or other mechanical ventilation systems running within the application area.
  - Areas by which gases could enter adjacent enclosed areas must be sealed prior to application and remain closed for up to 48hours post application.

IRF135 TRACTOR MOUNTED SHANK RAISED BED AND BROADCAST/FLAT APPLICATION USE DIRECTIONS:

Soil moisture:

- For tractor mounted shank applied treatments of IRF135 do not apply to dry soils. Target a soil moisture reading of ~50% or greater Available Water Content to a depth of 8 to 9 inches present for at least 24 to 48 hours prior to and until the start of the application.

Soil temperature at application:

- Maximum of 90°F at application depth.

Application Methods and Equipment:

- Apply IRF135 using chisels spaced no more than 12 inches apart and no more than 3 outlets evenly spaced per chisel (rear and forward facing type shank). The top most outlet must be no less than – 5 inches from the final air soil interface.
- For shank applications the use of tarps or a water cap does not eliminate the need to remove chisel traces. Use of a press board, ring roller or other device to effectively close chisel traces must be performed.

Application Depth:

- The point of injection must be a minimum of -5 inches from the final soil/air interface. The point of deep injection must be at a minimum of 18 inches from the final soil/air interface. Use deeper placement when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests.

Application Type	Injection depth	Single Sweep Chisel Spacing	Noble Plow Injector Outlet Spacing	Yetter Rig Injector Spacing	Tarped Type Sealing, Applied immediately after application*	Non-Tarped Type Sealing
Broadcast Shallow Shank	5-15 inches	6–12 inches Use of no	6–12 inches	4-6 inches	PE, VIF, TIF	Overhead sprinkler, water cap

		more than 3 nozzles per sweep with 4-5 inches / nozzle and bottom nozzle at no more than 15 inches from soil surface				and or Roller/Packer to compact soil surface, disc or similar equipment at a 3-4 inch depth to thoroughly mix soil and close chisel traces
Broadcast Deep Shank	>17 inches	18-24inches	NA	NA	NA	Roller/packer to compact soil surface
Raised Bed shallow shank or Strip Application	8–15 inches	6–12 inches Use of no more than 3 nozzles per sweep with 4-5 inches / nozzle and bottom nozzle at no more than 15 inches from soil surface	NA	4-6 inches	PE, VIF, TIF	Overhead Sprinkler, water cap and or Roller/Packer to compact soil surface, disc or similar equipment at a 3-4 inch depth to thoroughly mix soil and close chisel traces

* PE = Polyethylene film; VIF = Virtually Impermeable Film; TIF = Totally Impermeable Film

Prevention of End Row Spillage:

- Do not apply or allow IRF135 to spill onto the soil surface. Each injection line either needs a check valve located as close as possible to the soil injection point to avoid dripping or spillage. If a check valve system is not in place purge and drain the injection line prior to lifting the injection shanks from the ground.
- Only lift the injection shanks from the ground when the shut-off valve has been closed, and the IRF135 injection line has been depressurized to passively drain remaining IRF135 or when the system has been actively purged (e.g. via air compressor).

Injection Rig Calibration, Set-up, Repair, and Maintenance:

IRF135 application equipment must be calibrated and all control systems working properly. Proper calibration is critical to ensure IRF135 application rate and soil placement. Refer to the equipment manufacturer's instructions to properly calibrate the injection equipment. The equipment dealer, local Cooperative Extension Service, crop advisor or IRF135 dealer can provide assistance.

Planting Interval for Raised Bed Shank and Broadcast/Flat Application

- After application, leave the soil undisturbed for at least 5 days after application prior to tarp cutting or perforation/hole punching.
- For tarped applications, complete cutting of the tarp for removal or perforation/hole punching 2 to 24 hours prior to tarp removal or planting to assist in IRF135 dissipation.
- Tarp cutters and removers shall wear long-sleeved shirt, long pants and gloves when there is no waiting or aeration period between tarp cutting and removing the tarp following application and prior to planting.
- Soil can be planted with the target crop at a minimum of 10 days following application.
- Cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure and or aeration period.
- Soil applied under untarped shanked applications must remain undisturbed for a minimum of 10 days following completion of the application before tillage and or planting of the target crop.
- Use of a Jar Seedling and/or Transplant test for crop safety can be performed prior to planting the target crop. See pages XX-XX of this label for instructions.

Pests Controlled From Soil Treatment Uses:

Nematodes

Common Name (if applicable)	Scientific Name
Pin nematode	*Paratylenchus*
Ring nematode	*Mesocriconema* (=*Criconemoides*, =*Criconemella*)
Root knot nematode	*Meloidogyne*
Root-lesion nematode	*Pratylenchus*
Spiral nematode	*Helicotylenchus*
Sting nematode	*Belonolaimus*
Stubby-root nematode	*Paratrichodorus*
Stem and bulb nematode	*Tylenchus*

Soil Borne Fungi

Common Name (if applicable)	Scientific Name
Armillaria root rot	*Armillaria mellea*
Charcoal rot	*Macrophomina phaseolina*
Clubroot organism	*Plasmodiophora*
Corky root	*Pyrenochaeta*
Fusarium wilt	*Fusarium spp.*
	Phytophthora spp.
	Pythium spp.
	Rhizoctonia spp.
	Sclerotium rolfsii
Verticillium wilt	*Verticillium dahliae*

Insects in the Soil at the Time of Treatment

Common Name (if applicable)	Scientific Name (if applicable)
Cutworms	
Japanese beetles	

June beetles and larva	
Symphylan (centipedes)	
White grubs	
Wireworms	

Weeds

Common Name (if applicable)	**Scientific Name**
California burclover	*Medicago lupulina*
Common chickweed	*Stellaria media*
Common mallow	*Malva neglecta*
Common purslane	*Portulaca oleracea*
Field bindweed	*Convolvulus arvensis*
Grasses	
Morningglory spp.	*Ipomoea spp.*
Prostrate knotweed	*Polygonum aviculare*
Yellow nutsedge	*Cyperus esculentus*

Mollusks: Slugs and Snails.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

PESTICIDE STORAGE
Store in original container in a cool, dry place.

PESTICIDE DISPOSAL
Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL for non-refillable containers
This is a non-refillable container. Do not reuse or refill this container. Empty the package completely and triple rinse container (or equivalent pressure rinse) promptly after emptying with water to be used for application. Then dispose of the empty container according to state and local regulations. Place in trash or offer for recycling if available or return it to the Seller, or, if allowed by state and local authorities, by burning. If burned stay out of smoke.

TRIPLE RINSING INSTRUCTIONS:
For rigid, nonrefillable containers small enough to shake (with capacities equal to or less than 5 gallons):
Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container one-fourth full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

For rigid, non-refillable containers that are too large to shake (with capacities greater than 5 gallons):

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container one-fourth full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

PRESSURE RINSE PROCEDURE (all sizes):
Pressure rinse as follows: Empty the remaining contents into application equipment or a tank mix and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

CONTAINER DISPOSAL for rigid, refillable containers
Refillable container. Refill this container with IRF135 pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

LIMITATION OF WARRANTY AND LIABILITY
Read the entire label before using this product, including this Limitation of Warranty and Liability.

If the terms are not acceptable, return the product at once unopened for a refund of the purchase price.

This Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes set forth in the Directions for Use, subject to the inherent risks described below, when used in accordance with the Directions for Use under normal conditions.
TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, ISAGRO MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Buyers and Users of this product must be aware that there are inherent unintended risks associated to the use of this product, independent from the control of Isagro. These risks include, but are not limited to, weather conditions, soil factors, moisture conditions, diseases, irrigation practices, condition of the crop at the time of application, materials which are present in the tank mix with this product or prior to the application of it, cultural practices or the manner of use or application, all risks which are impossible to eliminate. The Buyers and Users should be aware that these factors may cause: ineffectiveness of the product, reduction of harvested yield of the crop (entirely or partially), crop injury or injury to non-target crops or plants or to rotational crops caused by carryover in the soil, resistance of the target weeds to this product. Therefore additional care, treatment and expense are required to take the crop to harvest.

If the Buyer does not agree with the acceptance of these risks, then THE PRODUCT SHOULD NOT BE APPLIED. To the extent consistent with applicable law, by applying this product the Buyer acknowledges and accepts these inherent unintended risks and AGREES THAT ALL SUCH RISKS ASSOCIATED WITH THE APPLICATION AND USE ARE ASSUMED BY THE BUYER.

To the extent consistent with applicable law, ISAGRO or Seller shall not be liable for any incidental,

consequential or special damages resulting from the use or handling of this product (including claims based in contract, negligence, strict liability, other tort or otherwise). To the extent consistent with applicable law, the exclusive remedy of the User or Buyer and the exclusive Liability of Isagro or Seller shall be the return of the purchase price of the product, or at the election of Isagro or Seller, the replacement of the product.

To the extent consistent with applicable law, this Company does not warrant any product reformulated or repackaged from this product except in accordance with this Company's stewardship requirements and with express written permission from this Company.

Isagro or its Seller must have prompt notice of any claim so that an immediate inspection of Buyer's or User's can be made. To the extent consistent with applicable law, if Buyer and User do not notify Isagro or Seller of any claims, in proper time, it shall be barred from obtaining any remedy.

To the extent consistent with applicable law, Buyers and Users are deemed to have accepted the terms of this Limitation of Warranty and Liability, which may not be modified by any verbal or written agreement.

Pages 57-72 are a publicly available science review located in Regulations.gov at:

http://www.regulations.gov/index.jsp#!documentDetail;D=EPA-HQ-OPP-2013-0658-0005

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Office of Chemical Safety and Pollution Prevention

MEMORANDUM **September 18, 2013**

SUBJECT: Revised Science Review in Support of the Registration of the TGAI/MP IR9804 and the EP, IRF 135, Respectively Containing 99.8% and 96.3% Allyl Isothiocyanate (AITC) As Their Active Ingredient. The TGAI/MP is an unregistered source of the active ingredient. Environmental Fate Addendum

Decision No :	469288 & 469289
DP Nos.:	406246 & 406248
EPA Reg. Nos:	89285-R & -E
Chemical Class:	Biochemical
CAS. No.:	57-06-7
PC Code:	004901
Tolerance Exemptions :	40 CFR 180.1167 (for AITC) in Oil of Mustard
MRID Nos. :	488241-01 to -08 & 489194-01 to -03

FROM: Russell S. Jones, Ph.D, Senior Biologist /S/ 09/18/2013
Biochemical Pesticides Branch
Biopesticides & Pollution Prevention Division (7511P)

TO: Gina Burnett, Regulatory Action Leader /S/ 09/18/2013
Biochemical Pesticides Branch
Biopesticides & Pollution Prevention Division (7511P)

ACTION REQUESTED

In response to a request for additional information and on behalf of Isagro, A. Roberts (TSG) submitted environmental fate data on AITC and its degradates in support of the registration of the TGAI/MP IR9804 and the EP, IRF 135, respectively containing 99.8% and 96.3% Allyl Isothiocyanate (AITC) as their active ingredient. The TGAI/MP is an unregistered source of the active ingredient.

The registrant had previously submitted Product Chemistry and Tier I Toxicity information and waivers for all Tier I Non-Target Organism data requirements which were reviewed and deemed

acceptable (**See Memorandum from R. S. Jones to G. Burnett, dated 05/15/2013**). In an email to A. P. Roberts (TSG, Inc), dated 8/15/2013, the following request for additional information was transmitted by the Agency:

"Management is requesting more information on the sold degradates of AITC (allylamine, carbon disulfide, and ATC) before moving forward with these registrations. Does ISAgro have quantitative information on the half-life of these compounds? And/or is there information availability to demonstrate low or no toxicity?"

In response, A.P. Roberts (TSG, Inc) submitted additional environmental fate information which is contained in a letter (A. P. Roberts to L. Hollis, dated 08/21/2013). Much of this information was submitted in the previous submission.

ENVIRONMENTAL FATE EXECUTIVE SUMMARY

Allylisothiocyanate (AITC) and its major degradates, Allylthiocyanate (ATC), Allylamine (AA), and Carbon disulfide (CDS), are expected to rapidly degrade in soil following application according to proposed label use instructions (tarp covered and deep injected following application). AITC and its structurally similar isomer ATC, with which it readily interconverts, are expected to completely degrade in soil in approximately 4-5 days post application. The remaining two degradates, AA and CDS are expected to rapidly degrade by microbial activity in the soil in time frames that are much less than 5 days based on the weight of laboratory evidence. Should any amount of AITC or its degradates volatilize into the atmosphere, they will be rapidly diluted and degraded via reaction with photochemically produced hydroxyl radicals.

AITC and its major degradates are not expected to be 5 days following application of the end-use product, , IRF 135 (EPA File Symbol No. 89285-E) when applied according to Agency approved label directions.

Details of this Re-evaluation of the Environmental Fate Information begins on page 5 of this document.

SUMMARY OF THE EXISTING STUDIES/DATA/INFORMATION

Under 40 CFR 180.1167 Allyl isothiocyanate is exempt from the requirement of a tolerance for residues when used as a component of food grade oil of mustard, in or on all raw agricultural commodities, when applied according to approved labeling. The inert ingredient is cleared for food use under 40 CFR 180.910.

The currently proposed label application methods are for pre-plant applications, which would be considered a non-food use. No residual activity is expected and the active ingredient will dissipate prior to crop seeding (10 days post application according to the draft label).

I. Active Ingredient Characterization (MRID 488241-01 & -02)

Allyl isothiocyanate (AITC) is the major component of natural mustard oil. It is present also in cooked cabbage, horseradish, and black mustard seed. It is synthetically produced from allyl iodide and potassium thiocyanate

Product Names:	TGAI/MP:	IR9804 (99.8% a.i.) (EPA File Symbol No. 89285-R)
	EP:	IRF135 (96.3% a.i.) (EPA File Symbol No. 89285-E)

Chemical Name:	Allyl isothiocyanate
Common Names:	AITC, 3-Isothiocyanato-1-propene
PC Code:	070704
CAS No.:	56-06-7
Molecular Wgt.:	99.15
Chemical Formula:	C_4H_5NS

II. Human Health Data Summary

The data presented in Table1 below are a summary of the toxicity data and information submitted to support the TGAI/MP. Data and information submitted in support of the TGAI/MP were bridged to support the EP. Guideline studies for acute toxicity testing were not submitted. In lieu of Guideline studies, the registrant submitted a request to bridge the acute toxicity data submitted in support of the TGAI/MP (containing 99.8% AITC) to support the acute toxicity data requirements for the EP (containing 96.5% AITC) [redacted]

These studies/data were previously reviewed by the Agency and deemed **ACCEPTABLE** (see Memorandum from R. S. Jones to G. Burnett, dated 05/15/2013).

Table 1. Mammalian Toxicology Profile for TGAI/MP AITC (40 CFR § 158.2050)			
Study/OPPTS Guideline No.	**Results**	**Toxicity Category/Description**	**MRID**
Acute oral toxicity (rat) (870.1100)	LD_{50} = 425.4 mg/kg	II	488241-03
Acute dermal toxicity (rat) (870.1200)	LD_{50} > 200 mg/kg	II	488241-04
Acute inhalation toxicity (rat) (870.1300)	LC_{50} > 0.21 mg/L	II	488241-05
Primary eye irritation (rabbit) (870.2400)	Waiver due to observed corrosiveness on skin	I	-
Primary dermal irritation (rabbit) (870.2500)	Corrosive	I	488241-06
Dermal sensitization (guinea pig) (870.2600)	Sensitizer	-	488241-07
Hypersensitivity incidents (885.3400)	-	-	-
90-Day oral toxicity (870.3100)	NOAEL = 25 mg AITC/kg bw/day No clinical effects observed	No subchronic toxicity	488241-08
90-Day dermal toxicity (870.3250)	No repeated exposure expected based on application methods and PPE requirements	-	488241-08
90-Day inhalation toxicity (870.3465)	No repeated exposure expected based on application methods and PPE requirements	-	488241-08
Mutagenicity (870.5100, 5300 and 5375)	Not a mutagen based on 3 studies conducted by NTP 1981, 1988, & 1991.	Not a mutagen	488241-08
Developmental toxicity (870.3700)	NOAEL = 60 mg AITC/kg bw/day No clinical effects observed	Not a teratogen	488241-08

III. Nontarget Organism Data Summary

The data presented in Table 2 below are a summary of the nontarget organism toxicity data and information submitted to support of the TGAI/MP. Refer to the appropriate pages in MRID 48844108 for more detailed information and specific reference citations from the scientific literature. These studies/data were previously reviewed by the Agency and deemed **ACCEPTABLE** (see Memorandum from R. S. Jones to G. Burnett, dated 05/15/2013).

Table 2. Non-Target Organism Data Requirements for TGAI/MP AITC (40 CFR § 158.2060)			
Study/OPPTS Guideline No.	**Results**	**Toxicity Category/Description**	**MRID**
Avian Acute Oral/OPPTS 850.2100	-	No acute oral exposure based on application method and rapid environmental degradation	48824108, p. 18
Avian Dietary/OPPTS 850.2200	-	No dietary exposure based on application method and rapid environmental degradation	48824108, p. 20
Freshwater Fish LC50/OPPTS 850.1075	96-hr LC_{50} = 0.077 ppm	Very Highly Toxic, but no aquatic exposure based on application method and rapid environmental degradation	48824108, pp. 22, 37-47
Freshwater Invertebrate/OPPTS 850.1010	48-hr EC_{50} = 0.73 ppm	Very Highly Toxic, but no aquatic exposure based on application method and rapid environmental degradation	48824108, pp. 23, 216-221
Non-target Plants/OPPTS		No non-target exposure based on	48824108, pp. 24-

Table 2. Non-Target Organism Data Requirements for TGAI/MP AITC (40 CFR § 158.2060)			
Study/OPPTS Guideline No.	**Results**	**Toxicity Category/Description**	**MRID**
850.4100 & 4150	-	application method and rapid environmental degradation	27
Non-target Insects	-	No non-target exposure based on application method and rapid environmental degradation	48824108, pp. 28, 29

Guideline studies were not submitted in support of the non-target organism data requirements. In lieu of Guideline studies, the applicant submitted rationales, on a Guideline-by-Guideline basis, for each non-target organism data requirement, which were supported both by scientific literature citations as well as an argument for a lack of exposure to non-target organisms to AITC based on its rapid degradation in soil, its widespread presence in commonly eaten foods, as well as by the methods and timing of application of the EP. These rationales were previously reviewed and deemed **ACCEPTABLE**.

The environmental fate of AITC is discussed in detail below. This information, as well as additional environmental fate information submitted by A. P. Roberts (TSG, Inc.) is re-evaluated here in support of the registrations of TGAI/MP IR9804 and the EP, IRF 135, respectively containing 99.8% and 96.3% Allyl Isothiocyanate (AITC) as their active ingredient.

Re-Evaluation of the Environmental Fate Allyl Isothiocyanate (AITC) a component of Oil of Mustard

A. Proposed Label Use Applications of the End-Use Product

The end-use product is intended to be applied according to the following methods:

1. Tractor-mounted shank injection at a depth of 8-15 inches followed by a tarp overlay;
2. Drip injection covered by a tarp overlay; and
3. Deep injection (>17-inches in depth) with no tarp covering.

Tarps are not to be removed until 5 days post application. Non-tarped, deep injection applications will have soil compacted over the injection line at planting, to prevent any escape of volatiles.

B. Uses of AITC

AITC has many streams into the environment. It may enter the environment indirectly via its use as a flavoring agent, and in pharmaceutical ointments and mustard plasters. AITC enters the environment directly via its use as an animal repellent and as a soil fumigant. It is a

naturally-occurring substance present in the leaves and seeds of *Brassica* Family plants, horse radish, and some cabbages. It is a root exudate of the invasive plant, garlic mustard (*Allaria petiolata*). The general public may be exposed to AITC via ingestion of certain foods and dermal contact with consumer products containing AITC (HSDB, 2013a, Accessed 09/17/2013). The estimated world consumption of allyl isothiocyanate/year is 455,000 and 79,000 kg from direct plant material and synthetic products, respectively (Pechacek et al., 1997 as cited by HSDB, 2013).

C. Fate of Applied Allylisothiocyanate in AITC in Soil & Water

When applied to soil as oil of mustard or as homogenized tissue of Mustard Family plants, sinigrin, the major glucosinolate compound in the plant tissue and oil, is degraded by the action of the enzyme myrosinase in the presence of moisture to yield allylisothiocyanate (AITC).

AITC has been observed to degrade rapidly in soils with a short half-life (T½) ranging from 20 to 60 hours (0.83 to 2.5 days) (Borek et al., 1995). The average T½ of AITC in six different soil types was reported to be 47 ± 27 hours, with the greatest degradation rate of in soils that have high organic carbon and total nitrogen (N) content. In addition, the AITC T½ in soil increases with increasing moisture content and decreases in soil with increasing temperature between 10°C and 25°C. During the first 24 hours, an average of 29.8% of AITC was transformed, or degraded, and over the first 10 days at 20°C, an average of 97.1% was degraded (Borek et al., 1995). Mean half-life was reported to be approximately 47 hours. The data also demonstrate that AITC transforms in sterilized soil at the same rate as intact soil, indicating that microbial populations are not responsible for the degradation (Borek et al., 1995). There was no correlation between degradation rates and pH.

However, Price et. al. (2005), in a study investigating the degradation of AITC-containing plant (*Brassica* spp.) tissue in soil, demonstrated that AITC degradation was over 3X greater in nonautoclaved soils vs. autoclaved soils, suggesting that microbial degradation is a major pathway of AITC dissipation from soil. In addition, in nonautoclaved, covered soils, degradation was relatively rapid. In unautoclaved, covered soils, AITC concentrations increased from 0.90 umol/L at 15 min post application to 1.39 umol/L at 8 hours (54% increase) then rapidly declined to 0.77 umol/L (45% decrease) at 24 hours post application. The spike in volatile AITC concentration at 4 hours post application was attributed to the trapping of AITC volatiles by the tarp covers, prior to full activation of soil degradation processes and the full depletion of AITC source material in the plant tissue.

Based on the data from Price et. al. (1997), if AITC degrades 45% in 16 hours from its highest concentration in soil (between 8 and 24 hours post application), then it is estimated that AITC is likely to degrade to nondetectable levels in soil in:

$$\frac{45\%\ \text{degradation}}{16\ \text{hours}} = \frac{100\%\ \text{degradation}}{X\ \text{hours}}$$

$$\mathbf{X = 35\ hours}$$

Based on the calculated estimate above and the data from Price et. al. (1997), AITC is likely to degrade to nondetectable levels in approximately 35 hours after reaching its peak concentration in soil (4 hours), or approximately 39 hours post application.

This is comparable to the data reported by Borek et. al. (1995; as cited in MRID 48822108) that demonstrated that AITC degraded in soil with a mean half life (for six different soils) of 47 hours. **Extrapolating these data indicates that AITC is likely to be degraded to nondetectable levels by no more than approximately 98 hours (approximately 4 days) post application.**

1. Major Degradates of AITC

Possible degradation products of AITC in soil can be proposed based on the decomposition products of AITC present in an aqueous solution in the pH range between 6 and 8, where AITC is proposed to degrade completely (Pecháček et al., 1997 as cited in MRID 48824108). Within this pH range, it was observed that the primary decomposition products identified at 80 °C and in lower quantities at 20 °C and 40 °C after an 80 min incubation, were: allyl thiocyanate (ATC); allylamine (AA); and carbon disulfide (CDS). All three degradates, as well as AITC, are expected to rapidly volatilize from the surfaces of uncovered soils and be subject to rapid degradation in the atmosphere, particularly via reaction with photochemically-produced hydroxyl radicals.

Once volatilized into the atmosphere, AITC, AA and CDS are expected to have half lives of 2.4 hours, 2.4 hours, 6.9 hours, and 5.5 days, respectively. Atmospheric degradation of ATC is expected to be similar to that of AITC based on its ready interconversion to AITC. These data indicate that if AITC or any of its degradates should escape from beneath tarped or compacted soils, it will be rapidly diffused and degraded in the atmosphere.

A. Allylthiocyanate (ATC)

ATC is an isomer of AITC and as such is expected to dissipate as rapidly as its parent, AITC. ATC is in a reversible equilibrium with AITC. Based on data from the study in aqueous solution by Pecháček et al. (1997 as cited in MRID 48824108), when AITC is incubated at pH 6.0 and 80 °C it ATC concentration increases initially from 1.0 millimoles/liter (mM/L) at time 0 to a maximum of 3.6 mM/L at 20 min incubation and declines to 1.0 mM/L at 80 min at pH 6.0, a 72% decline in 60 minutes. Based on the data above, ATC is expected to dissipate no less rapidly than AITC in moist soils and likely will not be present at detectable levels by the time the parent AITC declines to nondetectable levels (no more than approximately 47 hours post application).

B. Allylamine

Allylamine (AA) is readily biodegradable in soil and water (HSDB, 2013b). AA was degraded 89% in 4 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test. AA readily volatilizes into the atmosphere where it is expected to be rapidly degraded via reaction with photochemically-produced hydroxyl radicals with a half life of 6.9 hours. AA has been shown to degrade in aqueous solution at pH 6.0 and 80 °C approximately 51% in 30 minutes.

C. Carbon disulfide

Carbon disulfide (CDS) is a "natural product of anaerobic biodegradation and is released to the atmosphere from oceans and landmasses as well as geothermal sources. The ocean appears to be a major source of carbon disulfide. It is a natural constituent of the Acacia tree and the valley oak (Coastal and marshland areas of high biological activity are also a major source." (HSDB, 2013c). Although it would appear that biodegradation does not play a large role in the dissipation of CDS as it is used as a disinfectant and is toxic to bacteria, a study by Alcantara et. al. (1999) CDS was reported to be degraded 100% by gram negative bacteria in 5 to 8 hours. It can be transformed by reactions with amino acids and proteins and via reaction with the P-450 monooxygenase system (WHO, 2000); these components are likely present in microbe rich soils. In addition, CDS has been demonstrated to be degraded aerobically and anaerobically by the soil microbes *Thiobacillus thioparus* TK-m and Paracoccus denitrficans (BioCyc, 2013); it is also metabolized in the leaves of CDS producing plants, where it is produced as a natural fungicide.

CDS has a weak UV adsorption band at 317 nm, suggesting a potential for direct photolysis, although this is not a major atmospheric degradation pathway. It hydrolyzes slowly to carbon dioxide and hydrogen disulfide in alkaline solutions. It volatilizes from uncovered soil and water surfaces very rapidly and is expected to be degraded via reaction with photochemically-produced hydroxyl radicals within 5.5 days (HSDB, 2013c). Other atmospheric data indicates that oxidative processes in the atmosphere will degrade CDS with within 12 days (ASTDR, 1996). In a review by WHO (2000), a soil treatment study with 50% carbon disulfide found that concentrations of CDS declined rapidly after application and were nondetectable within 24 hours

Based on the weight of evidence, the data indicate that CDS will rapidly degrade via microbial activity in the soil if covered with tarps immediately following application or deep injected followed by soil surface compaction, and in the atmosphere.

2. Summary

AITC and its major degradates are expected to rapidly degrade in soil following application according to proposed label use instructions (tarp covered and deep injected following application). AITC and its structurally similar isomer ATC, with which it readily interconverts, are expected to completely degrade in soil in approximately 4 days post application. The remaining two degradates are expected to rapidly degrade by microbial activity in the soil in time frames that are much less than 5 days based on the weight of laboratory evidence. Should any

amount of AITC or its degradates volatilize into the atmosphere, they will be rapidly diluted and degraded via reaction with photochemically produced hydroxyl radicals

REFERENCES

Alcantara, S., I. Estrada, S. Vasquez, and S. Revah. 1999. Carbon disulfide oxidation by a microbial consortium from a trickling filter. Biotechnology Letters. 21: 815-819.

BioCyc. 2013. MetaCyc Pathway: Carbon Disulfide Oxidation (aerobic). http://biocyc.org/META/NEW-IMAGE?type=PATHWAY&object=PWY-5336 (Accessed 09/17/2013)

HSDB (Hazardous Substances Data Bank). 2013a. Allyl Isothiocyanate. Environmental Fate and exposure summary. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB (Accessed 09/17*2013)

HSDB (Hazardous Substances Data Bank). 2013b. Allylamine. Environmental Fate and exposure summary. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB (Accessed 09/17/2013)

HSDB (Hazardous Substances Data Bank). 2013c. Carbon disulfide. Environmental Fate and exposure summary. http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB (Accessed 09/17/2013)

Price, J. P., C. S. Charron, A. M. Saxton, and C. E. Sams. 2005. Allyo Isothiocyanate and carbon dioxide produced dueing degradation of *Brassica juncea* tissue in different soil conditions. HortScience 40(6): 1734-1739. http://hortsci.ashspublications.org/content/40/6/1734.full.pdf

World Health Organization (WHO). 2000. Carbon Disulfide. Air Quality Guidelines, 2nd Edition. WHO Regional Office for Europe, Copenhagen, Denmark. http://www.euro.who.int/__data/assets/pdf_file/0019/123058/AQG2ndEd_5_4carbodisulfide.PDF

Pages 83-96 – *Inert ingredient information may be entitled to confidential treatment*

BPPD New Product/Non-Registered AI Source Readiness Screen

Date: 10/18/2012

Review Date: 10/18/2012

File Symbol No.: 89285-E

Reviewers: Colin Walsh & Sadaf Shaukat

BPB/MPB: BPB

Comments: Note to Reviewer: The a.i., AITC, has a proposed use pattern of a pre-plant soil treatment (fumigant).

Pass/Fail: PASS

Hours Worked: 0.5 hour

	Checklist Item	Yes	No	N/A	Comments
1.	**Forms**				
a.	8570-1: Application for Registration	X			
b.	8570-4: CSF	X			
c.	8570-27: Formulator's Exemption			X	
d.	8570-34: Certification with Respect to Data	X			
e.	8570-35: Data Matrix	X			
2.	**Confidential Statement of Formula (CSF) - review for alternate formulations too**				
a.	Signed and dated	X			
b.	Food-use? (If no, skip to 1e.)		X		
c.	All inerts cleared for food-use				
d.	Active cleared for food-use				
e.	All inerts cleared for nonfood-use (skip if food-use)	X			
f.	Conventional or antimicrobial actives present?		X		
g.	CSF accurately reflects label	X			
h.	Active(s) + Inert(s) = 100%	X			
i.	CAS #s for all inerts	X			
j.	Chemical names provided for inerts	X			
k.	Units in all applicable boxes	X			

l.	Proprietary inerts? If so, is info. on file with the Agency?			X	
m.	Supplier information adequately listed	X			
n.	Certified limits correct?	X			
o.	If certified limits are outside recommended range, explanation provided?			X	
p.	Microbial: culture collection reference			X	
q.	Microbial: strain designation for a.i.			X	
r.	Microbial: potency provided with a.i.			X	
s.	Alternate formulations?		X		
t.	Are alternate formulations actually alternate and not a new product?			X	
3.	**Data Matrix-ACTIVE INGREDIENT**				
a.	Separate data matrix for the source of AI		X		See Data Matrix for MP (EPA File Symbol No. 89285-R) submitted concurrently with this EP
b.	All product chemistry data requirements addressed (guideline by guideline)				
c.	All toxicology data requirements addressed (guideline by guideline)				
d.	All nontarget toxicology data requirements addressed (guideline by guideline)				
e.	Reflects info. reported on CSF (e.g.: identity of AI)				
Note for 3b.-d. above: if not addressed in data matrix, may be addressed in elsewhere in submission					
4.	**Data Matrix-MP or EP**				
a.	Separate data matrix for the product	X			
b.	All product chemistry/product analysis data requirements addressed (guideline by guideline)	X			
c.	All mammalian/human health toxicology/ pathogenicity data requirements addressed (guideline by guideline)	X			

d.	All Tier 1 nontarget organism toxicology/ pathogenicity data requirements addressed (guideline by guideline)	X			
e.	Efficacy data (if public health pests on label)			X	
f.	HSRB review required?		X		
5.	**Data Requirements-Guideline Studies**				
Note: This section is for submitted guideline studies only. See below for waivers and rationales.					
a.	Product chemistry: do all submitted studies appear to satisfy the data requirements?	X			
b.	Toxicology: do all submitted studies appear to satisfy the data requirements?			X	
c.	Nontargets: do all the submitted studies appear to satisfy the data requirements?			X	
d.	Other (residue data, special studies, etc.)			X	
6.	**Data Requirements- Waivers**				
Note: This section is for waivers only. This does not apply to rationale submitted to satisfy the data requirements.					
a.	Are there any requests for waivers? Please note.			X	See Rationales/Literature (section 7) below.
b.	For each applicable data requirement, does the waiver request have a separate scientific rationale justifying why testing is not applicable?				
c.	Does each waiver request seem reasonable and justified?				
7.	**Data Requirements- Rationales/Literature**				
Note: This section is for rationales only. This does not apply to requests submitted to waive the data requirements.					
a.	Have rationales been submitted in lieu of guideline studies? Please note.	X			Data waiver rationales have been submitted for the toxicity and nontarget organisms. The acute toxicity rationales include citations to the data studies submitted for the MP.
b..	Does each rationale have scientific literature citations where applicable?	X			

c.	Are the rationale and scientific citations organized in reasonable order to facilitate timely review and is each guideline addressed individually?	X			
d.	Are copies of cited scientific literature included in the package?	X			
e.	Does the rationale appear to be reasonable and scientific?	X			
8.	**Label**				
a.	Restricted Use Pesticide statement (If applicable)			X	
b.	Product name, brand or trademark	X			
c.	Ingredient statement correct? Microbial: strain designation Microbial: potency designation	X			
d.	"Keep Out of Reach of Children" (KOOROC) Statement	X			
e.	Signal word	X			
f.	First aid statement	X			
g.	Net contents/net weight	X			
h.	EPA Reg. No. and Establishment No.	X			
i.	Company name and address	X			
j.	Precautionary statement: hazards to human and domestic animals Microbial: dusk mask statement	X			
k.	Environmental hazards	X			
l.	Physical and chemical hazards (if app.)		X		The CSF indicates a flammability of 47°C. The EP is considered combustible and must have the appropriate language.
m.	Directions for use	X			
m.	Storage and disposal	X			
o.	Warranty statement	X			
p.	Worker protection	X			
q.	Batch code	X			

21-Day Screen Completed by Contractor

21-Day Expires on 9/21/12

Jacket # 89785-R
MRID# 488241

Content Screen: Recommend to Pass/Fail

11-3 Review: Pass/Fail/NA

Overall Status: Recommend to Pass/Fail

Transfer This Jacket to:

Andrew Bryceland

21-Day Screen Completed by Contractor

21-Day Expires on 9-21-12

Jacket # 89285-E
MRID# 489194

Content Screen: Recommend to [Pass]/Fail

11-3 Review: [Pass]/Fail/NA

Overall Status: Recommend to [Pass]/Fail

Transfer This Jacket to:

ANDREW BRYCELAND

PRIA 2 – 21 Day Content Screen Review Worksheet

(EPA/OPP Use Only)

3/23/09

21 Day Screen Start Date: 8/31/12

Experts In-Processing Signature: MP Date 9/5/12 Fee Paid: Yes ✓

Division management contacted on issues No_____Yes _____Date _____

EPA Reg. Number: 89285-E	EPA Receipt Date: 8/31/12

	Items for Review			Yes	No	N/A*
1	**Application Form** (EPA Form 8570-1)(link to form) signed & complete including package type			X		
2	**Confidential Statement of Formula** all boxes completed, form signed, and dated (EPA Form 8570-4) (Link to form)			X		
	a) All inerts (link to http://www.epa.gov/opprd001/inerts/), including fragrances, approved for the proposed uses (see Footnote A)	**yes** X	**no**			
3	**Certification with Respect to Citation of Data** (EPA Form 8570-34) (Link to form) completed and signed (N/A if 100% repack)			X		
	Certificate and data matrix consistent			X		
	If applicant is relying on data that are compensable, is the offer to pay statement included. (see Footnote B)	**yes**	**no**			
	If applicable, is there a letter of Authorization for exclusive use only.					
4	**Formulator's Exemption Statement** (EPA Form 8570-27) (Link to form) completed and signed (N/A if source is unregistered or applicant owns the technical)					X
5	**Data Matrix** (EPA Form 8570-35) (Link to form) both internal and external copies (PR 98-5) (Link to PR 98-5) completed and signed (N/A if 100% repack)			X		
	a) Selective Method (Fee category experts use)	**yes** X	**no**			
	b) Cite-All (Fee category experts use)					
	c) Applicant owns all data (Fee category experts use)					
6	**5 Copies of Label (link to http://www.epa.gov/oppfead1/labeling/lrm/) (Electronic labels on CD are encouraged and guidance is available)(link to** http://www.epa.gov/pesticides/regulating/registering/submissions/index.htm#labels)			X		

7	**Is the data package consistent with PR Notice 86-5** (link to PRN 86-5)	X		
8	**Notice of Filing (link to http://www.epa.gov/pesticides/regulating/tolerance_petitions.htm) included with petitions (link to http://www.epa.gov/pesticides/regulating/tolerances.htm)**			X
9	**If applicable for conventional applications, reduced risk rationale (link to http://www.epa.gov/opprd001/workplan/reducedrisk.html)**			X
10	**Required Data (link to http://www.epa.gov/pesticides/regulating/data_requirements.htm) and/or data waivers. See Footnote C.**	X		
	a) List study (or studies) not included with application			

Comments:

MRID 489194 - DATA PASSED 11-3 REVIEW. AA 9/11/12

INERTS APPROVED FOR FOOD USE, PRE-HARVEST. AA 9/6/12

* N/A – Not Applicable

Footnotes

A. During the 21 day initial content review, all CSFs will be reviewed to determine whether all inerts listed, including fragrances, are approved for the proposed uses. If an unapproved inert is identified, the applicant must either 1) resolve the inert issue by, for example, removing the inert, substituting it with an approved inert, submitting documentation that EPA approved the inert for the proposed pesticidal uses, correcting mistakes on the CSF, etc. or 2) provide the data to support OPP approval of the inert or 3) withdraw the application. Removing or substituting an inert ingredient will require a new CSF and may require submission of data. All information, forms, data and documentation resolving the inert issue must have been received by the Agency or the application withdrawn within the 21 day period, otherwise, the Agency will reject the application as described below.

To successfully complete this aspect of the 21 day initial content screen, applicants are **strongly encouraged** to verify that all inert ingredients have been approved for the application's uses **even if a product is currently registered** by consulting the inert Web

site [link to http://www.epa.gov/opprd001/inerts/lists.html] and if the inert is not approved, to **obtain the necessary inert approval prior to submitting an application to register a pesticide product containing that inert ingredient.** Some inert ingredients are no longer approved for food uses or certain types of uses. The name and/or CAS number on a CSF must match the name and CAS number on this web site. Simple typographical errors in the name or CAS number have resulted in processing delays.

If an inert is not listed on the inert ingredient web site and the applicant believes that the inert has been approved, the applicant should contact the Inert Ingredient Assessment Branch (IIAB) at inertsbranch@epa.gov and resolve the issue. Copies of the correspondence with IIAB resolving the issue should accompany the application. All new inerts except PIP inerts are reviewed by IIAB. The IIAB should also be contacted for any questions on what supporting data needs to be submitted for and the Agency's inert review process. Questions on PIP inerts should be directed to the Chief of Microbial Pesticides Branch [Link to http://www.epa.gov/oppbppd1/biopesticides/contacts_bppd.htm].

When a brand, trade, or proprietary name of an inert ingredient is listed on a CSF, additional information such as an alternate name of the inert, CAS number or other information [link to http://www.epa.gov/opprd001/inerts/tips.pdf] must also be included to enable the Agency to determine if it has been approved. Each component of an inert mixture (including a fragrance) must be identified. In some cases, the supplier of the mixture or fragrance may need to provide this information to the Agency. Prior to the Agency's receipt of an application, applicants must arrange with a proprietary mixture or fragrance supplier to provide the component information to the Agency or promptly upon EPA's request. If the inert ingredients in a proprietary blend (including fragrances) cannot or are not identified or provided within the 21-day content review period, the Agency will reject the application.

During the 21 day content review, applicants should submit information to the individual identified by the Agency when the applicant is informed of an unapproved inert.

Unapproved Inerts Identified on CSFs

All applications except conventional new products and PIPs

Once an unapproved inert is identified on a CSF, the Agency will contact the applicant with the following options:

1. Correct the application by, for instance, correcting the inert's identity or CAS number, providing documentation that the inert has been approved, or removing the unapproved inert from the CSF or replacing it with one that is approved for the application's uses; or

2. Submit the information and data needed for the Agency to approve the unapproved inert. If this option is selected and implemented, the Agency may request an extension in the PRIA decision review timeframe to accommodate the inert review/approval process;

3. Withdraw the application (the Agency retains 25% of the full fee for the fee category estimated); or

If none of these options is selected and implemented by the applicant within the 21 day content review period, the Agency will reject the application and retain 25% of the full fee of the category identified.

Conventional New Product Applications

When the Registration Division identifies an unapproved inert on a CSF with an application for a new product that the applicant has not identified as requiring an inert approval (R311, R312 or R313), it will contact the applicant with the following options:

1. Correct the application by, for instance, correcting the inert's identity or CAS number, providing documentation that the inert has been approved, or removing the unapproved inert from the CSF or replacing it with one that is approved for the application's uses; or

2. Submit the information and data needed for the Agency to approve the unapproved inert, including any required petition to establish or amend a tolerance or exemption from a tolerance. (This option may change the PRIA category for the application, which could require a longer decision review time and a larger fee. If additional fees are due, they must be received by the Agency within the 21 day content review period.)

3. Withdraw the application (the Agency retains 25% of the full fee for the fee category estimated); or

If none of the above options is selected and implemented during the 21-day content-review period, the Agency will reject the application and retain 25% of the appropriate fee for the new product-inert approval category.

PIP Applications

When the Biopesticide and Pollution Prevention Division identifies an unapproved inert on a PIP CSF and a request to approve the inert does not accompany the application, it will contact the applicant with the following options:

1. Correct the application by, for instance, correcting the spelling or name of the inert to that in 40 CFR 174, or providing documentation that the inert has been approved; or

2. Submit the information and data needed for the Agency to approve the unapproved inert. If an inert ingredient tolerance exemption petition is required, the petition must be received by the Agency and the B903 fee paid within the 21 day period. If this option is selected and implemented, the Agency will discuss harmonizing the timeframe for both actions.

3. Withdraw the application (the Agency retains 25% of the full fee for the fee category estimated); or

If none of the above options is selected and implemented during the 21 day content review period, the Agency will reject the application and retain 25% of the fee.

B. A policy on documentation of offers to pay is still being developed, however, for a me-too or fast track (similar/identical) new product, R300 or A530, an application without the necessary authorizations of offers to pay will be placed into either R301 or A531. The Agency recommends that authorizations of offers to pay be submitted with other PRIA applications to avoid delays in the Agency's decision.

C. Biopesticide applicants are advised to contact the Agency and discuss study waivers prior to submitting their application to the Agency. Documentation of such discussions should be submitted with the study waiver.

B 672

A B672 is described as a new product; non-food use or food use having established tolerance or tolerance exemption; unregistered source of active ingredient; no data compensation issues; all Tier I data requirements for product chemistry, toxicology, non-target organisms, and product performance must be addressed with product-specific data or with request for data waivers supported by scientific rationales.

This PRIA code is interpreted as an application for registration of a microbial or biochemical pesticide product that is **not** substantially similar or identical in its uses and/or formulation to products that are currently registered. These applications require product specific chemistry data, acute toxicity data and other Tier I mammalian and non-target toxicity data as determined by the general use patterns for the product. When public health pests are claimed, efficacy (product performance) data for the product must be submitted.

End Use (EP) Data. Manufacturing Use (MP) product or Technical Grade of the Active Ingredient (TGAI). This is for products with an unregistered source of active ingredient(s). These products are not 100% identical (repack)

Guideline No.	Product Chemistry Data Study Title	EP Data Submitted/ Cited		MP or TGAI Data Submitted/ Cited	
		Yes	No	Yes	No
880.1100	Product Identity & Composition	X			
880.1200	Description of starting materials production and formulation process.	X			
880.1400	Discussion on the formation of impurities	X			
830.1700	Preliminary analysis	X			
830.1750	Certified limits (158.345)	X			
830.1800	Enforcement analytical method	X			
830.6302	Color	X			
830.6303	Physical State	X			
830.6304	Odor	X			
830.6313	Stability to normal and elevated temperatures metal and metal ions				
830.6315	Flammability	X			
830.6317	Storage stability	X			
830.6319	Miscibility	X			
830.6320	Corrosion Characteristics	X			
830.7000	pH	X			
830.7050	UV/ Visible Absorption				
830.7100	Viscosity	X			
830.7200	Melting Point				
830.7220	Boiling Point				
830.7300	Density	X			
830.7550 830.7560	Partition Coefficient				

870.3250	90-day dermal - rat	X					
870.3465	90-day inhalation - rat						
870.3700	Prenatal Developmental – rat preferably						
870.5100	Bacterial Reverse Mutation Test						
870.5300 870.5375	*In vitro* mammalian cell assay						

Manufacturing Use Product (MP) or Technical Grade Active Ingredient (TGAI) Non-target Organism Toxicity. The test substance must be the TGAI or MP

Guideline No.	Non-Target Organism Acute Toxicity Study Title	Data submitted		Cited		Waiver Request Rationale	
		Yes	No	Yes	No	Yes	No
850.2100	Avian Acute Oral Toxicity	X					
850.2200	Avian Dietary Toxicity						
850.1075	Fish Acute Toxicity, Freshwater						
850.1010	Aquatic Invertebrate Acute Toxicity, Freshwater						
850.4100	Terrestrial Plant Toxicity, Seedling Emergence						
850. 4150	Terrestrial Plant Toxicity, Vegetative Vigor						

Efficacy – Whether or not these data are submitted depends on the proposed label use (public health pests). Data are conducted on the end-use product.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

September 5, 2012

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

OPP Decision Number: D-469289
EPA File Symbol or Registration Number: 89285-E
Product Name: IRF135
EPA Receipt Date: 31-Aug-2012
EPA Company Number: 89285
Company Name: ISAGRO USA, INC

MELVIN GRABEN
ISAGRO USA, INC
430 DAVIS DRIVE, SUITE 240
MORRISVILLE, NC 27560-

SUBJECT: Receipt of Registration Application Subject to Registration Service Fee

Dear Registrant:

The Office of Pesticide Programs has received your application and certification of payment. If you submitted data with this application, the results of the PRN-2011-3 screen will be communicated separately. During the administrative screen, the Office of Pesticide Programs has determined that this Action is subject to a Pesticide Registration Service Fee as defined in the Pesticide Registration Improvement Act.

The Action has been identified as Action Code: B672.1

UNREGISTERED SOURCE OF ACTIVE INGREDIENT;NEW PRODUCT;Reduced Fee: Linked to PRIA Application;TIER I DATA REQUIREMENTS FOR PRODUCT CHEMISTRY, TOXICOLOGY, NON-TARGET ORGANISMS & PRODUCT PERFORMANCE MUST BE ADDRESSED WITH PRODUCT-SPECIFIC DATA OR REQUESTS FOR DATA WAIVERS WITH SUPPORTING SCIENCE;NO DATA COMPENSATION ISSUES;NON-FOOD USE OR FOOD USE HAVING ESTABLISHED TOLERANCE OR TOLERANCE EXEMPTION;

No additional payment is due at this time. If you have any questions, please contact the Pesticide Registration Service Fee Ombudsman at (703) 308-0152.

Sincerely,

Front End Processing Staff
Information Technology & Resources Management Division

Fee for Service

{923039/~

This package includes the following

- ◉ New Registration
- ○ Amendment

☑ Studies? ☐ Fee Waiver?

☐ volpay % Reduction: ____

for Division

- ○ AD
- ◉ BPPD
- ○ RD

Risk Mgr. 91

Receipt No. S-	923039
EPA File Symbol/Reg. No.	89285-E
Pin-Punch Date:	8/31/2012

☐ This item is NOT subject to FFS action.

Action Code:

Requested: B672.1

Granted: B672.1

Amount Due: $ _____

Parent/Child Decisions:

Primary: 89285-R

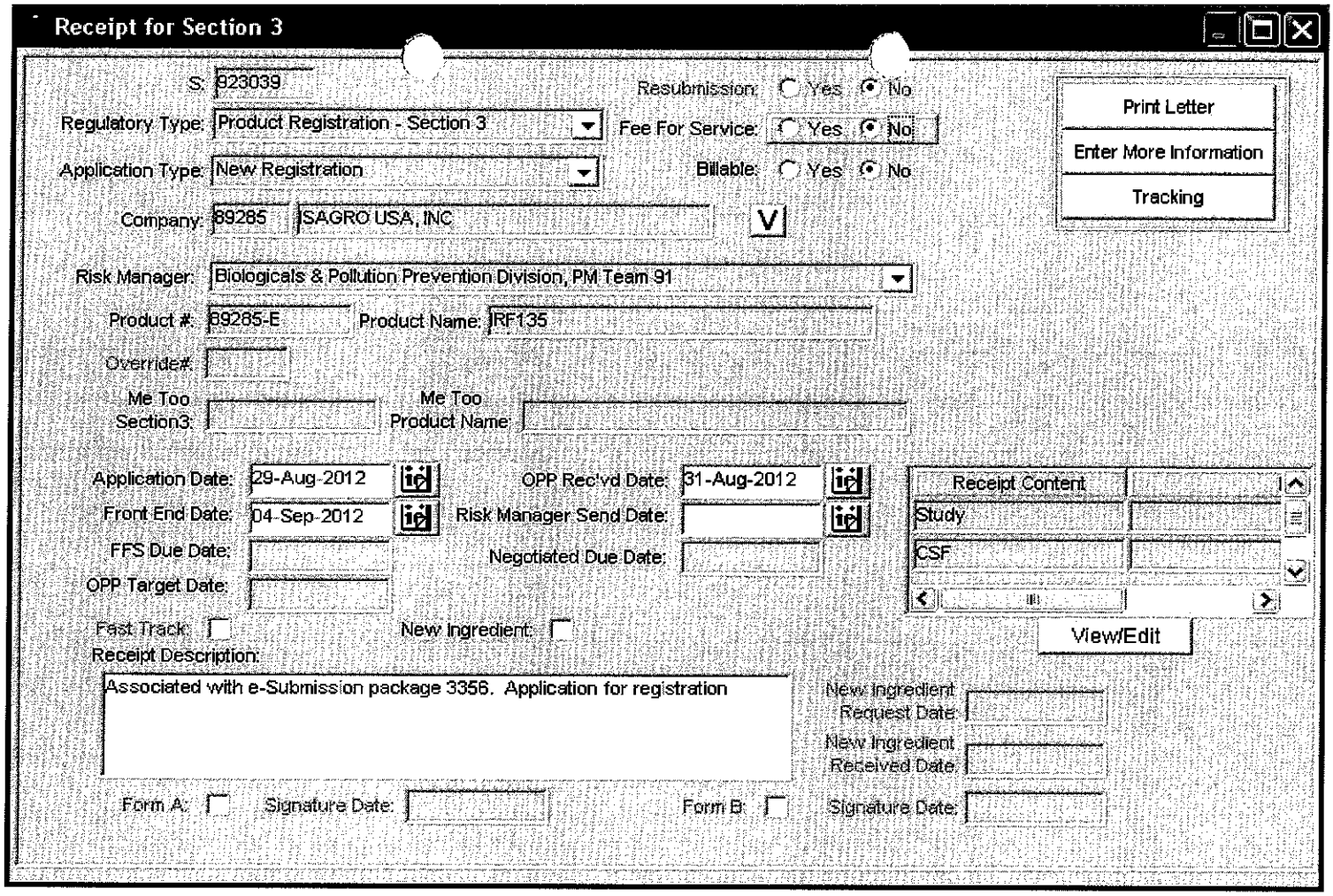
Secondary 89285-E

☒ Inert Cleared for Intended Use ☒ Uncleared Inert in Product

Reviewer: Andrew Bycoland Date: 9/5/12

Remarks:

RESUBMISSION



Online Payment

Step 3: Confirm Payment 1 | 2 | 3

Thank you.
Your transaction has been successfully completed.

Pay.gov Tracking Information

Application Name: PRIA Service Fees
Pay.gov Tracking ID: 257QC47F
Agency Tracking ID: 74350727408
Transaction Date and Time: 08/27/2012 23:44 EDT

Payment Summary

Address Information		Account Information		Payment Information	
Account Holder Name:	Amy Plato Roberts	Card Type:	American Express	Payment Amount:	$2,068.00
Billing Address:	1150 18th Street NW, Suite 1000	Card Number:	**********2368	Transaction Date and Time:	08/27/2012 23:44 EDT
Billing Address 2:	Technology Sciences Group Inc.	Decision Number:			
City:	Washington	Registration Number:	89285-E		
State / Province:	DC	Company Name:	Isagro USA, Inc.		
Zip / Postal Code:	20036	Company Number:	89285		
Country:	USA	Action Code:	B672.1		

Please read instructions on reverse side before completing form. Form Approved. OMB No. 2070-0060. Approval expires 05-31-98

EPA	United States Environmental Protection Agency Washington, DC 20460	☒ Registration ☐ Amendment ☐ Other	OPP Identifier Number

Application for Pesticide – Section I

1. Company/Product Number	2. EPA Product Manager	3. Proposed Classification
89285-E	**Linda Hollis**	☒ None ☐ Restricted
4. Company/Product (Name) **IRF135**	PM# **91/Biochemical/BPPD**	

5. Name And Address Of Applicant *(Include ZIP Code)*

Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

☐ *Check if this is a new address*

6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to:

EPA Reg. No. _____

Product Name _____

Section II

☐ Amendment – Explain below.
☐ Resubmission in response to Agency letter dated _____
☐ Notification – Explain below.
☐ Final Printed labels in response to Agency letter dated _____
☐ "Me Too" Application.
☐ Other – Explain Below.

Explanation: Use additional page(s) if necessary. (For section I and Section II.)

PRIA Category B672.1 – New product, unregistered source. Refer to cover letter dated August 29, 2012 for details.

Pre-payment of PRIA fee: www.pay.gov Tracking ID: 257QC47F; **Agency Tracking ID:** 74350727408; **Transaction Date and Time:** Aug 27, 2012 23:44 EDT PM

Section III

1. Material This Product Will Be Packaged In:

Child Resistant Packaging	Unit Packaging	Water Soluble Packaging	2. Type of Container
☐ Yes* ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☒ Metal ☒ Plastic ☐ Glass ☐ Paper ☐ Other (Specify) _____
***Certification must be submitted**	If "Yes" Unit Packaging wgt. / No. per Container	If "Yes" Unit Packaging wgt. / No. per Container	

3. Location of Net Contents Information	4. Size(S) Retail Container	5. Location of Label Directions
☒ Label ☐ Container	40 – 168 gallons	☒ On Label ☐ On Labeling accompanying product

6. Manner in Which Label is Affixed to Product ☒ Lithographed ☐ Pager glued ☐ Stenciled ☐ Other _____

Section IV

1. Contact Point *(Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)*

Name	Title	Telephone No. (Include Area Code)
Mel Graben / mgraben@isagro-usa.com	**Regulatory Manager**	**(919) 321-5203**

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

6. Date Application Received **(Stamped)**

2. Signature	3. Title	4. Typed Name	5. Date
	**Regulatory Consultant / aroberts@tsgusa.com**	**Amy Plato Roberts**	**August 29, 2012**

EPA Form 8570-1 (Rev. 8-94) Previous editions are obsolete

Technology Sciences Group Inc.

712 Fifth St., Suite A
Davis, CA 95616
Direct in CA: (530) 757-1432
Direct in DC: (202) 828-8964
Fax: (530) 757-1299
E-Mail: aroberts@tsgusa.com

Amy Plato Roberts
Senior Regulatory Consultant

Linda Hollis, Chief, Biochemical Pesticides Branch
Biopesticides and Pollution Prevention Division (7511P)
Office of Pesticide Programs, EPA
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

August 29, 2012

RE: IRF135 (EPA File Symbol 89285-E)
B672.1 Application for new product, unregistered source

Dear Ms. Hollis:

Enclosed with this letter you will find the following in support of a new formulated end-use product, with an unregistered source:

1) Application form;
2) Copy of PRIA fee prepayment;
3) Copy of letter of meeting minutes from May 24, 2011 and Agency letter of concurrence dated July 6, 2011;
4) Confidential Statement of Formula;
5) Certification with Respect to Citation of Data form;
6) Data Matrix, including a publicly releasable "blacked-out" version;
7) Five (5) copies of the product label;
8) Data Volumes 1 through 4 – refer to the Transmittal Document for a complete listing of data volume titles and corresponding OCSPP Guideline Numbers.

Please note the following with regards to this application:

Identity of the Product

IRF135, containing the biochemical active ingredient **allyl isothiocyanate (AITC)**, is a formulated end-use product for use as a pre-plant soil treatment for the control of soil borne fungi, nematodes, weeds and insects. The product will be soil-applied only, as a pre-plant shank injection, broadcast/flat fume application, or raised bed application either shank injected into the row or injected through the drip irrigation system to field or greenhouse soils. All applications are prior to planting crops, so this is a non-food use pesticide product.

Product Chemistry Data

A complete set of product chemistry data for an EP is submitted with this application – refer to Volume 2 of this submission. In addition, product-specific physical and chemical characteristics data is included in a separate data volume – refer to Volume 3 of this submission.

Human Health Toxicity Data

Rationales for no further testing have been submitted for all required acute toxicity data requirements – refer to Volume 4 of this submission. Rationales are based on data available on the Technical Grade Active Ingredient, the inert ingredient, and the anticipated exposure to workers and handlers.

E-Dossier Submission Pilot

With the assistance of ITRMD (Bob Schultz) this label amendment and related tolerance exemption petition are being submitted electronically through the e-Dossier Submission Pilot. If you have any difficulty with the electronic submission of the information, please do not hesitate to let me know.

With this application we believe all biochemical pesticide Tier 1 data requirements for new product have been fulfilled. Let me know if there are any questions or comments.

Regards,

Amy Plato Roberts
Regulatory Consultant for Isagro USA Inc.
Direct dial (530) 757-1432; aroberts@tsgusa.com

MRID Root Number 489194-00

VOLUME 1 OF 4 OF SUBMISSION

TRANSMITTAL DOCUMENT

NAME AND ADDRESS OF SUBMITTER:

Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

REGULATORY ACTION:

PRIA B672 Application for Registration of **IRF135 (EPA File Symbol 89285-E)**

TRANSMITTAL DATE:

August 29, 2012

LIST OF SUBMITTED STUDIES:

MRID NUMBER	VOLUME NUMBER	EPA STUDY TITLE	OCSPP GUIDELINE NUMBER
	1 of 3	(Transmittal Document)	----------
489194 -01	2 of 3	Product Chemistry for IRF135	880.1100-1400 830.1700-1800 830.6302-7300
489194 -02	3 of 4	Physical and Chemical Properties for IRF135	830.6315, 830.7000 830.7100, 830.7300
489194 -03	4 of 4	Response to Tier 1 Biochemical Data Requirements for IRF135	see title page

COMPANY NAME: Isagro USA, Inc.

COMPANY OFFICIAL:

Amy Plato Roberts, Regulatory Agent

COMPANY CONTACT:

Amy Plato Roberts
Technology Sciences Group Inc.
712 Fifth Street, Suite A, Davis, CA 95616
Tel. (530) 757-1432; email: aroberts@tsgusa.com

Form Approved OMB Nos. 2070-0060; 2070-0107;2070-0122; 2070-0164

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
1200 Pennsylvania Avenue, N.W.
WASHINGTON, D.C. 20460

Paperwork Reduction Act Notice: The public reporting burden for this collection of information is estimated to average 1.25 hours per response for registration and 0.25 hours per response for reregistration and special review activities, including time for reading the instructions and completing the necessary forms. Send comments regarding burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, Collection Strategies Division (2137T), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460. Do not send the completed form to this address.

Certification with Respect to Citation of Data

Applicant's/Registrant's Name, Address, and Telephone Number	EPA Registration Number/File Symbol
Isagro USA, Inc. **430 Davis Drive, Suite 240** **Morrisville, NC 27560**	**82985-E**
Active Ingredient(s) and/or representative test compound(s) **Allyl isothiocyanate**	Date **August 29, 2012**
General Use Pattern(s) (list all those claimed for this product using 40 CFR Part 158) **Terrestrial, non-food use**	Product Name **IRF135**

NOTE: If your product is a 100% repackaging of another purchased EPA-registered product labeled for all the same uses on your label, you do not need to submit this form. You must submit the Formulator's Exemption Statement (EPA Form 8570-27).

☐ I am responding to a Data-Call-In Notice, and have included with this form a list of companies sent offers of compensation (the Data Matrix form should be used for this purpose).

SECTION I: METHOD OF DATA SUPPORT (Check one method only)

☐ I am using the cite-all method of support, and have included with this form a list of companies sent offers of compensation (the Data Matrix form should be used for this purpose).

☒ I am using the selective method of support (or cite-all option under the selective method), and have included with this form a completed list of data requirements (the Data Matrix form must be used).

SECTION II: GENERAL OFFER TO PAY

[Required if using the cite-all method or when using the cite-all option under the selective method to satisfy one or more data requirements]

☐ I hereby offer and agree to pay compensation, to other persons, with regard to the approval of this application, to the extent required by FIFRA.

SECTION III: CERTIFICATION

I certify that this application for registration, this form for reregistration, or this Data-Call-In response is supported by all data submitted or cited in the application for registration, the form for reregistration, or the Data-Call-In response. In addition, if the cite-all option or cite-all option under the selective method is indicated in Section I, this application is supported by all data in the Agency's files that (1) concern the properties or effects of this product or an identical or substantially similar product, or one or more of the ingredients in this product; and (2) is a type of data that would be required to be submitted under the date requirements in effect on the date of approval of this application if the application sought the initial registration of a product of identical or similar composition and uses .

I certify that for each exclusive use study cited in support of this registration or reregistration, that I am the original data submitter or that I have obtained the written permission of the original data submitter to cite that study.

I certify that for each study cited in support of this registration or reregistration that is not an exclusive use study, either: (a) I am the original data submitter; (b) I have obtained the permission of the original data submitter to use the study in support of this application; (c) all periods of eligibility for compensation have expired for the study; (d) the study is in the public literature; or (e) I have notified in writing the company that submitted the study and have offered (i) to pay compensation to the extent required by sections 3(c)(1)(F) and/or 3(c)(2)(B) of FIFRA; and (ii) to commence negotiations to determine the amount and terms of compensation, if any, to be peid for the use of the study.

I certify that in all instances where an offer of compensation is required, copies of all offers to pay compensation and evidence of their delivery in accordance with sections 3(c)(1)(F) and/or 3(c)(2)(B) of FIFRA are available and will be submitted to the Agency upon request. Should I fail to produce such evidence to the Agency upon request, I understand that the Agency may initiate action to deny, cancel or suspand the registration of my product in conformity with FIFRA.

I certify that the statements I have made on this form and all attachments to it are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Signature	Date	Typed or Printed Name and Title
	**August 29, 2012**	**Amy Plato Roberts, Regulatory Consultant**

EPA Form 8570-34 (12-2003) Electronic and Paper versions available. Submit only Paper version

Form Approved OMB No, 2070-0060

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W. WASHINGTON, D.C. 20460

DATA MATRIX

Date	EPA Reg. No./File Symbol	Page
August 29, 2012	89285-E	1 of 4

Applicant's/Registrant Name and Address
Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

Product
IRF135

Ingredient Allyl isothiocyanate

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
OCSPP 880.1100	Product Identity and Composition	489194-01	Isagro USA, Inc.	OWN	
OCSPP 880.1200	Description of Starting Materials, Production and Formulation Processes	489194-01	Isagro USA, Inc.	OWN	
OCSPP 880.1400	Discussion of the Formation of Impurities	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.1700	Preliminary Analysis	488241-02	Isagro USA, Inc.	OWN	
OCSPP 830.1750	Certified Limits	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.1800	Enforcement Analytical Method	488241-02	Isagro USA, Inc.	OWN	
OCSPP 830.6302	Color	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.6303	Physical State	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.6304	Odor	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.6313	Stability at Normal and Elevated Temperatures, Metals and Metal Ions	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.6315	Flammability	489194-02	Isagro USA, Inc.	OWN	

Signature	Name and Title	Date
	Amy Plato Roberts, Regulatory Agent	August 29, 2012

Form Approved OMB No, 2070-0060

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W. WASHINGTON, D.C. 20460

DATA MATRIX

Date	EPA Reg. No./File Symbol	Page
August 29, 2012	89285-E	2 of 4

Applicant's/Registrant Name and Address
Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

Product
IRF135

Ingredient Allyl isothiocyanate

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
OCSPP 830.6317	Storage Stability	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.6319	Miscibility	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.6320	Corrosion Characteristics	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.7000	PH	489194-02	Isagro USA, Inc.	OWN	
OCSPP 830.7050	UV/Visible Light Absorption	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.7100	Viscosity	489194-02	Isagro USA, Inc.	OWN	
OCSPP 830.7200	Melting Point / Melting Range	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.7220	Boiling Point / Boiling Range	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.7300	Bulk Density	489194-02	Isagro USA, Inc.	OWN	
OCSPP 830.7520	Particle Size, Fiber Length and Diameter Distribution	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.7550, 7560, 7570	Partition Coefficient (n-Octanol/Water)	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.7840	Water Solubility	489194-01	Isagro USA, Inc.	OWN	
OCSPP 830.7950	Vapor Pressure	489194-01	Isagro USA, Inc.	OWN	

Signature	Name and Title	Date
	Amy Plato Roberts, Regulatory Agent	August 29, 2012

Form Approved OMB No, 2070-0060

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W. WASHINGTON, D.C. 20460

DATA MATRIX

Date	EPA Reg. No./File Symbol	Page
August 29, 2012	89285-E	3 of 4

Applicant's/Registrant Name and Address
Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

Product
IRF135

Ingredient Allyl isothiocyanate

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
OCSPP 870.1100	Acute Oral Toxicity	489194-03	Isagro USA, Inc.	OWN	
OCSPP 870.1200	Acute Dermal Toxicity	489194-03	Isagro USA, Inc.	OWN	
OCSPP 870.1300	Acute Inhalation Toxicity	489194-03	Isagro USA, Inc.	OWN	
OCSPP 870.2400	Primary Eye Irritation	489194-03	Isagro USA, Inc.	OWN	
OCSPP 870.2500	Primary Dermal Irritation	489194-03	Isagro USA, Inc.	OWN	
OCSPP 870.2600	Dermal Sensitization	489194-03	Isagro USA, Inc.	OWN	
OCSPP 870.3100	90-Day Oral	488241-08	Isagro USA, Inc.	OWN	Data submitted for TG.
OCSPP 870.3250	90-Day Dermal	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 870.3465	90-Day Inhalation	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 870.3700	Prenatal Developmental	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 870.5100	Bacterial Reverse Mutation Test	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 870.5300, 5375	In vitro Mammalian Cell Assay	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI

Signature	Name and Title	Date
	Amy Plato Roberts, Regulatory Agent	August 29, 2012

Form Approved OMB No, 2070-0060

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W. WASHINGTON, D.C. 20460

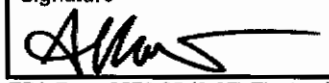
DATA MATRIX

Date	EPA Reg. No./File Symbol	Page
August 29, 2012	89285-E	4 of 4

Applicant's/Registrant Name and Address	Product
Isagro USA, Inc. 430 Davis Drive, Suite 240 Morrisville, NC 27560	**IRF135**

Ingredient Allyl isothiocyanate

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
OCSPP 850.2100	Avian Acute Oral Toxicity	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 850.2200	Avian Dietary Toxicity	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 850.1075	Fish Acute Toxicity	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 850.1010	Aquatic Invertebrate Acute Toxicity	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 850.4100	Terrestrial Plant Toxicity, Seedling Emergence	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 850.4150	Terrestrial Plant Toxicity,Vegetative Vigor	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI
OCSPP 880.4350	Nontarget Insect Testing	488241-08	Isagro USA, Inc.	OWN	Data submitted for TGAI

Signature	Name and Title	Date
	Amy Plato Roberts, Regulatory Agent	August 29, 2012

Form Approved OMB No, 2070-0060

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W. WASHINGTON, D.C. 20460

DATA MATRIX

Date	EPA Reg. No./File Symbol	Page
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Applicant's/Registrant Name and Address
Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

Product
IRF135

Ingredient Allyl isothiocyanate

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
[redacted]			Isagro USA, Inc.	OWN	
			Isagro USA, Inc.	OWN	
			Isagro USA, Inc.	OWN	
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			Isagro USA, Inc.	OWN	
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			Isagro USA, Inc.	OWN	
			Isagro USA, Inc.	OWN	
			Isagro USA, Inc.	OWN	

Signature

E-SUBMISSION

Name and Title
Amy Plato Roberts, Regulatory Agent

Date
August 29, 2012

Form Approved OMB No, 2070-0060

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W. WASHINGTON, D.C. 20460

DATA MATRIX

Date	EPA Reg. No./File Symbol	Page
August 29, 2012	89285-E	2 of 4

Applicant's/Registrant Name and Address
Isagro USA, Inc.
430 Davis Drive, Suite 240
Morrisville, NC 27560

Product
IRF135

Ingredient Allyl isothiocyanate

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
[redacted]			Isagro USA, Inc.	OWN	
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Signature	Name and Title	Date
[signature]	Amy Plato Roberts, Regulatory Agent	August 29, 2012

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			Isagro USA, Inc.	OWN	Data submitted for TG
			Isagro USA, Inc.	OWN	Data submitted for TGAI
			Isagro USA, Inc.	OWN	Data submitted for TGAI
			Isagro USA, Inc.	OWN	Data submitted for TGAI
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			Isagro USA, Inc.	OWN	Data submitted for TGAI
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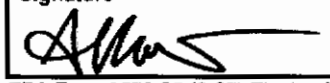
			Isagro USA, Inc.	OWN	Data submitted for TGAI

Signature	Name and Title	Date
	Amy Plato Roberts, Regulatory Agent	August 29, 2012

IRF135

(Alternate Brand Name: "Dominus")

For Agricultural and General Soil Treatment Use

A BROAD SPECTRUM MULTI-PURPOSE PRE-PLANT SOIL TREATMENT FOR THE CONTROL OF CERTAIN SOIL BORNE FUNGI, NEMATODES, WEEDS and INSECTS

ACTIVE INGREDIENT:
Allyl isothiocyanate.....96.3%
OTHER INGREDIENTS:.....3.7%
TOTAL: 100.0%
Contains 8.19 lbs. active ingredient (allyl isothiocyanate) per gallon. This product weighs 8.5 lbs. per gallon.

KEEP OUT OF REACH OF CHILDREN

DANGER

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail).

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, and then continue rinsing. • Call a poison control center or physician for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 minutes. • Call a poison control center of doctor for treatment advice.
If swallowed	• Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything to an unconscious person. • Call a poison control center or physician for treatment advice.
If Inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice
NOTE TO PHYSICIAN	
Probably mucosal damage may contraindicate the use of gastric lavage.	
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For Chemical Emergency Spill Leak Fire Exposure or Accident Call CHEMTREC Day or Night Domestic North America 800-424-9300 International 703-527-3883 (collect calls accepted).	

EPA Reg. No. (pending as File Symbol 89285-E) **EPA Est. No.** XXXXX-XXX-XXX
Net Contents:
(Batch Code/Lot No: *will be placed on the container*)

Manufactured for:
Isagro USA, Inc.
430 Davis Drive, Suite 240

Morrisville, NC 27560

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed, absorbed through skin, or inhaled. Do not get in eyes, on skin or on clothing. Do not breathe vapor. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before use.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

When performing activities without the potential for liquid contact all handlers (including applicators) must wear:

- Coveralls worn over long sleeve shirt and long pants
- Chemical-resistant footwear plus socks
- Chemical-resistant (such as nitrile or butyl) gloves
- Protective eyewear

Where liquid contact is a potential all handlers (including mixers, loaders and applicators) in addition to the above listed PPE must wear:

An air purifying respirator with an organic-vapor removing cartridge with pre-filter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any N, R, P or HE pre-filter.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard any clothing and or PPE that have been drenched or heavily contaminated with this product's concentrate. Do not reuse clothing or PPE that has been drenched or heavily contaminated.

ENGINEERING CONTROLS

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

- Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

For terrestrial uses only. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash water or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirement specific to your State or Tribe, consult the State/Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box apply to uses of this product that are covered by the Worker. Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of forty-eight (48) hours unless wearing appropriate PPE.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Protective eyewear
- Chemical-resistant gloves, (such as nitrile or butyl)
- Footwear plus socks

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

EXCEPTION: If the product is soil-injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

USE PRECAUTION

The product must only be used in a well-ventilated area. Do not use IRF135 if it cannot be applied according to the use patterns on the label.

USE DIRECTIONS

Apply IRF135 as a preplant soil treatment only and as part of an integrated pest management (IPM) program to aid in reducing or controlling the damaging effects of soil borne pests and diseases.

Soil Treatment Application Methods

Apply as a preplant shank injection, broadcast/flat fume application, or raised bed application either shank injected into the row or injected through the drip irrigation system. Specific

directions for each application method follow label instructions to achieve optimum performance

Planting Interval

- After application, leave the soil undisturbed for at least 10 days after application.
- Cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure period.
- For tarped applications, tarp perforation 24 to 48 hours prior to planting can be necessary to assist in IRF135 dissipation.
- Aeration is usually complete when IRF135 odor is no longer detectable. See label section on the use of Jar Seedling and/or Transplant tests for safety steps taken prior to planting target crop.

General Soil Treatment Application Rates

Number of applications per year: IRF135 may be applied to soil as a pre-plant soil treatment prior to planting with subsequent applications allowable to the same soil within the same year provided the previous crop is completely harvested prior to application.

Open field: Use 10 - 40 gallons of IRF135 per one acre (85 - 340 lb/A).

Greenhouse: Use 10 - 40 gallons of IRF135 per one acre (85 - 340 lb/A) or 0.23gal / 1,000ft^2 – 0.92 gal/1,000ft^2.

TABLE 1. PREPLANT SOIL APPLICATION RATES

TREATMENT SITE	BROADCAST EQUIVALENT RATES GAL/A*	BROADCAST EQUIVALENT RATES (LBS PRODUCT/A
Field soils to be planted to: Asparagus, brassica vegetables (broccoli, cauliflower), cereal grains, cucurbit crops (cucumber, squash, melons), fruiting vegetables (e.g. eggplant, peppers, tomatoes), herbs and spices, leek, leafy vegetables (lettuce), legume vegetables, pineapples, root and tuber vegetables (carrot, garlic, onion, potato, sweet potato)	10 - 40	85 - 340
Field soils to be planted to: Strawberries, berries (cane fruit) , fruit and nut crops, citrus, pome fruit trees, stone fruit trees, tree nuts, tropical and subtropical fruits, vineyards	10 - 40	85 - 340
Nursery, Turf, and Ornamental Soils to be planted to: Turf, lawns, parks, golf greens, athletic fields, recreational turf area, ornamentals, floral crops, forest tree seedlings	10 - 40	85 - 340
Greenhouse soils to be planted to: Food and Non-food crops	10 - 40	85 - 340

Seed or Transplant beds to be planted to:, Food crops and non-food crops	10 - 40	85 - 340
*Use the higher labeled rates for muck and heavy clay soils, as well as for those pests and or diseases such as cyst forming nematodes, *Macrophomina, Fusarium or Phytophthora* or hard coated weed seeds for example Malva, Clover or Nutsedge		

APPLICATION DIRECTIONS

Soil temperature: maximum of 90°F at application depth

Soil preparation:

- Ensure the soil is well prepared and generally free at the surface of large clods. Large clods can prevent efficient soil sealing and reduce effectiveness of the product.
- Cultivate the soil to a minimum depth of 5-8" and or equal to the desired treatment depth.
- Thoroughly incorporate plant residues into the soil to allow decomposition prior to treatment. Leave little or no plant residue present on the soil surface. Undecomposed plant material can harbor pests that will not be controlled and can interfere with the soil seal after application. Let crop residue that is present lie flat to permit the soil to be sealed effectively.
- Where applicable, fracture compacted soil layers (plow pans) within the desired treatment zone before or during application of IRF135.
- **Deviation from the above soil preparation conditions can result in less than satisfactory results.**

Soil moisture:

- It is critical to maintain adequate soil moisture before, during and 48 hours post-treatment. Plan soil treatment for seasons, crop rotations, or irrigation schedules which leave adequate moisture in the soil.
- The soil must be moist (typically with enough moisture to allow weed seeds to become imbibed) from 1.5 inches below the soil surface to at least the minimum desired depth of the target treatment zone. The amount of moisture needed (typically greater than 50% Available Water Content at 9 inches) in this zone will vary according to soil type. The surface soil generally dries very rapidly and is not considered in this determination.

Weather Conditions:

- Prior to soil treatment the weather forecast for the day of application and the 48-hour period following the soil treatment must be checked to determine if unfavorable weather conditions exist or are predicted and whether soil treatment should begin.
- Apply IRF135 in the presence of wind speeds of at least 2 mph at the start of the applications or projected to reach at least 5 mph during the application.
- Check weather forecasts 48 hours prior to application to ensure proper conditions are present at the time of application. Weather conditions and or advisories can be downloaded online at http://www.nws.noaa.gov.

Buffer Zones: Do not apply IRF135 within 25' of any occupied structure, such as a school, daycare, hospital, retirement home, business or residence.

Pre-Planting After Application of IRF135

Effects of Rain:

- If significant rainfall occurs within 24 hours after IRF135 application (enough to saturate soil that has been treated with IRF135), a reduction in pest control can occur.

Recontamination Prevention:

- IRF135 will control pests that are present in the soil treatment zone at the time of soil treatment. It will not control pests that are introduced into the soil after soil treatment period has ended. To avoid re-infestation of treated soil, DO NOT use irrigation water, transplants, seed pieces, or equipment that could carry soil-borne pests from infested land. Avoid contamination from moving infested soil onto treated beds through cultivation, movement of soil from outside the treated zone, dumping contaminated soil in treated fields and soil contamination from equipment or crop remains. Clean equipment carefully before entering treated fields.

Testing of Treated Soils Prior to Planting:

- Allow IRF135 to dissipate completely before planting the crop.
- When determining the appropriate time interval before planting, consideration of factors that impact IRF135 dissipation include rate of application, depth of injection, soil temperature, soil preparation and type, soil moisture and use of various plastic films and or water sealing.
- Use of a lettuce seed and or tomato/pepper transplant test can be used to determine if sufficient time has elapsed between soil treatment and planting as described below.

Lettuce Seed Test

- After a minimum of 7 days after application proceed with the following Seed Jar test.
- Use a trowel to dig into the treated soil to a depth at or just beneath the depth of IRF135 injection and remove 2 to 5 samples with enough soil to fill a quart sized jar half-way, mix lightly, apply moisture enough to germinate seeds, sprinkle seeds evenly over the soil surface and seal immediately with a lid for air tight conditions.
- Sample the field in several areas, especially those areas that are not representative of the general field conditions and or having higher moisture content, different soil texture or areas where rate delivery is different.
- Prepare another similar sample of untreated soil for comparison.
- Keep the jars out of direct sunlight and at a temperature of 65° to 85°F. (Direct sunlight can overheat and kill the seedlings). Lettuce seed will not germinate in the dark so place in diffuse sunlight.
- After 1 to 3 days, check each jar for seed germination.
- If seeds in the treated jar germinate and grow similar to the untreated soil sample then the treated area is safe for planting.

Tomato/Pepper Transplant Test

- After a minimum of 7 days after application proceed with the following transplant test.
- Transplant 5 to 10 healthy, actively growing tomato or pepper seedlings into treated beds at normal planting depth and several locations within the treated area. If available repeat in an area of field *not treated* with IRF135 for comparison. If a wetter, heavier area of the treated field is available place the transplants there.

- Inspect the transplants in 3 days for plant injury including wilt, chlorosis, or leaf and root tip burn. Ensure that proper soil moisture conditions exist for transplants to remain free from water stress. If plants in the treated area are asymptomatic and or are similar in growth and appearance to plants in the non-treated area it is safe to plant.

IRF135 Drip Injection Application: Additional Use Directions

Drip Injection Use Precautions:

- The following applies to drip (trickle) irrigation systems.
- Crop injury and a reduction in efficacy can result from non-uniform distribution of IRF135 in irrigation water used to treat soil.
- For questions related to equipment calibration, consult your local State Extension Service specialist, equipment manufacturer or dealer.

Soil preparation:

- Ensure compacted soil layers (plow pans) within the desired treatment zone are tilled and/or fractured if it is considered normal practice before application of IRF135 to ensure adequate soil drainage. Note that conditions where soil layers (plowpans) exist and are not tilled can result in reduced pest control, differences in planting interval or plant growth as a result of compacted or shallow soil conditions.
- The application site must be in seedbed condition. Ensure beds are listed, shaped and ready for planting.
- Ensure initial soil moisture is at ~50% of field capacity at 2 to 3 inches and down to 9 inches depth at the time of IRF135 application. Soil texture and amount of water to be applied will impact the desired initial % field capacity necessary for drip injection.

IRF135 Dosage:

- Determining IRF135 dosage is based on consideration of the intended crop to be planted, treated area conditions, preparation, application method, target pest, and soil type.
- Use drip emitters with spacing of 6 to 12 inches with shallow subsurface placement to ensure thorough wetting of the soil area being treated by IRF135 drip injection.
- IRF135 must be metered at a target concentration between 800 – 2000 ppm into the water supply line and passed through a mixing device such as a centrifugal pump with by-pass agitation or static mixer to assure proper agitation and mixing to a target concentration (ppm) for even distribution before distribution into the drip irrigation system. The concentration of IRF135 should not exceed 2000 ppm at any time during the injection period within the drip line.
- The volume of irrigation water to deliver to the treated area is dependent upon the soil type, % soil moisture or the % of field capacity at the start of the application and the target moisture level following application and equipment rising.
- Determine the irrigation water flow and adjust the flow rate of IRF135 to meet the target ppm in irrigation water. Insert a static mixer or similar device immediately after the IRF135 injection point to insure adequate mixing with the irrigation water.

General Chemigation Application Information:

1. Apply this product only through drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
2. Crop injury or lack of effectiveness can result from non-uniform distribution of treated

water.

3. If you have questions about calibration, contact State Extension Service specialists, equipment manufacturers or other experts.
4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
5. A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Chemigation Systems Connected to Public Water Systems:

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

For Drip (Trickle) Chemigation Systems:

1. The irrigation system (main line, headers, drip tape) must be thoroughly inspected for leaks before the application starts. The leak detection process requires that the irrigations system be at full operating pressure. The time required at full operating pressure will vary according to the system design and layout, soil type and target ppm concentration. Signs of leaks may include puddling along major pipes and at the top or ends of rows and/or on the bed surface or movement or shifting of beds due to bed collapse in over saturated conditions. Any leaks discovered must be repaired prior to application of IRF135. For leaks discovered during application of IRF135, immediately stop injection, wear all appropriate PPE and repair the line insuring that the problem is corrected before commencing with the drip applied injection.
2. The system must contain a functional check valve (back flow prevention device), vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
4. With use of injection pumps (e.g. Diaphragm or Centrifugal type pumps) the pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

7. To inject IRF135, use a metering device (such as a positive pressure system, positive displacement injection pump, diaphragm pump, or a Venturi system) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
8. Use of an inert gas such as nitrogen or dry compressed air is acceptable for use in a positive pressure system.

Injection System Flush After IRF135 Application:

- After IRF135 injection, continue drip irrigation with clean water to flush remaining IRF135 completely out of the system. Apply 3 times the volume of water equivalent to the capacity of the drip injection system from the point of injection to the ends of the drip tape to ensure IRF135 is completely voided from the injection lines and drip tape.
- Do not allow any IRF135 to remain in the system after application.
- If common lines are used for both the IRF135 application and to apply the water seal (if applied), the lines must be adequately flushed before starting the water seal and/or normal irrigation practices.

Soil Sealing or Tarp Use:

- When tarps are used with drip injection application, they must be in place prior to injection of IRF135.
- Tarp edges must be buried along the row furrow and at the ends of each row.

***Untarped* Drip Applications:**

- The drip tape must be buried a minimum of 5 inches below the soil/air interface.

Planting Interval:

- After application, leave the soil undisturbed for at least 10 days after application.
- Extremely cold, wet, or cold and wet soils can decrease dissipation of IRF135 and can require a longer soil exposure period.
- For tarped applications, tarp perforation 24 to 48 hours prior to planting can be necessary to assist in IRF135 dissipation.
- Aeration is usually complete when IRF135 odor is no longer detectable. See label section on the use of Jar Seedling and or Transplant tests for crop safety steps taken prior to planting target crop.

Requirements for Pre-Plant Greenhouse Soil Treatment

- Applications methods for use in greenhouse soil treatment may be applied as drip injection or tractor mounted shank where applicable according to the methods described for open field with exceptions listed below:
    - All applications must be tarped or double water sealed (delivered via overhead sprinkler)
    - During the application, keep doors, vents and windows to the outside open and keep fans or other mechanical ventilation systems running within the application area.
    - Areas by which gases could enter adjacent enclosed areas must be sealed prior to application and remain closed for up to 48hours post application.

IRF135 Raised Bed and Broadcast Shank Applications: Additional Use Directions

Soil moisture:

- For tractor mounted shank applied treatments of IRF135 do not apply to dry soils. Target a soil moisture reading of 50% or greater Available Water Content to a depth of 8 to 9 inches present for at least 24 to 48 hours prior to and until the start of the application.

Soil temperature at application:

- Maximum of 90°F at application depth.

Application Methods and Equipment:

- Apply IRF135 using chisels spaced no more than 12 inches apart and no more than 3 outlets evenly spaced per chisel (rear and forward facing type shank). The top most outlet must be no less than 8 inches from the final air soil interface.
- For shank applications the use of tarps or a water cap does not eliminate the need to remove chisel traces. Use of a press board, ring roller or other device to effectively close chisel traces must be performed.

Application Depth:

- The point of injection must be a minimum of 8 inches from the final soil/air interface. The point of deep injection must be at a minimum of 18 inches from the final soil/air interface. Use deeper placement when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests.

Application Type	Injection depth	Single Sweep Chisel Spacing	Noble Plow Injector Outlet Spacing	Yetter Rig Injector Spacing	Tarped Type Sealing, Applied immediately after application*	Non-Tarped Type Sealing
Broadcast Shallow Shank	8-15 inches	6–12 inches Use of no more than 3 nozzles per sweep with 4-5 inches / nozzle and bottom nozzle at no more than 15 inches from soil surface	6–12 inches	4-6 inches	PE, VIF, TIF	Overhead sprinkler, water cap and or Roller/Packer to compact soil surface, disc or similar equipment at a 3-4 inch depth to thoroughly mix soil and close chisel traces
Broadcast Deep Shank	>17 inches	18-24inches	NA	NA	NA	Roller/packer to compact soil surface

Raised Bed shallow shank or Strip Application	8–15 inches	6–12 inches Use of no more than 3 nozzles per sweep with 4-5 inches / nozzle and bottom nozzle at no more than 15 inches from soil surface	NA	4-6 inches	PE, VIF, TIF	Overhead Sprinkler, water cap and or Roller/Packer to compact soil surface, disc or similar equipment at a 3-4 inch depth to thoroughly mix soil and close chisel traces

- PE = Polyethylene film
- VIF = Virtually Impermeable Film
- TIF = Totally Impermeable Film

Prevention of End Row Spillage:

- Do not apply or allow IRF135 to spill onto the soil surface. Each injection line either needs a check valve located as close as possible to the soil injection point to avoid dripping or spillage. If a check valve system is not in place purge and drain the injection line prior to lifting the injection shanks from the ground.
- Only lift the injection shanks from the ground when the shut-off valve has been closed, and the IRF135 injection line has been depressurized to passively drain remaining IRF135 or when the system has been actively purged (e.g. via air compressor).

Injection Rig Calibration, Set-up, Repair, and Maintenance:
IRF135 application equipment must be calibrated and all control systems working properly. Proper calibration is critical to ensure IRF135 application rate and soil placement. Refer to the equipment manufacturer's instructions to properly calibrate the injection equipment. The equipment dealer, local Cooperative Extension Service, crop advisor or IRF135 dealer can provide assistance.

Pests Controlled From Soil Treatment Uses:

Nematodes

Common Name (if applicable)	Scientific Name
Pin nematode	*Paratylenchus*
Ring nematode	*Mesocriconema* (=*Criconemoides*, =*Criconemella*)
Root knot nematode	*Meloidogyne*
Root-lesion nematode	*Pratylenchus*
Spiral nematode	*Helicotylenchus*
Sting nematode	*Belonolaimus*
Stubby-root nematode	*Paratrichodorus*
Stem and bulb nematode	*Tylenchus*

Soil Borne Fungi

Common Name (if applicable)	Scientific Name
Armillaria root rot	*Armillaria mellea*
Charcoal rot	*Macrophomina phaseolina*
Clubroot organism	*Plasmodiophora*
Corky root	*Pyrenochaeta*
Fusarium wilt	*Fusarium spp.*
	Phytophthora spp.
	Pythium spp.
	Rhizoctonia spp.
	Sclerotium rolfsii
Verticillium wilt	*Verticillium dahliae*

Insects in the Soil at the Time of Treatment

Common Name (if applicable)	Scientific Name (if applicable)
Cutworms	
Japanese beetles	
June beetles and larva	
Symphylan (centipedes)	
White grubs	
Wireworms	

Weeds

Common Name (if applicable)	Scientific Name
California burclover	*Medicago lupulina*
Common chickweed	*Stellaria media*
Common mallow	*Malva neglecta*
Common purslane	*Portulaca oleracea*
Field bindweed	*Convolvulus arvensis*
Grasses	
Morningglory spp.	*Ipomoea spp.*
Prostrate knotweed	*Polygonum aviculare*
Yellow nutsedge	*Cyperus esculentus*

Mollusks: Slugs and Snails.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

PESTICIDE STORAGE
Store in original container in a cool, dry place.

PESTICIDE DISPOSAL
Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL for non-refillable containers
This is a non-refillable container. Do not reuse or refill this container. Empty the package completely and triple rinse container (or equivalent pressure rinse) promptly after emptying with water to be used for application. Then dispose of the empty container according to state and local regulations. Place in trash or offer for recycling if available or return it to the Seller, or, if allowed by state and local authorities, by burning. If burned stay out of smoke.

TRIPLE RINSING INSTRUCTIONS:
For rigid, nonrefillable containers small enough to shake (with capacities equal to or less than 5 gallons):
Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container one-fourth full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

For rigid, non-refillable containers that are too large to shake (with capacities greater than 5 gallons):
Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container one-fourth full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

PRESSURE RINSE PROCEDURE (all sizes):
Pressure rinse as follows: Empty the remaining contents into application equipment or a tank mix and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

CONTAINER DISPOSAL for rigid, refillable containers
Refillable container. Refill this container with IRF135 pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

LIMITATION OF WARRANTY AND LIABILITY
Read the entire label before using this product, including this Limitation of Warranty and Liability.

If the terms are not acceptable, return the product at once unopened for a refund of the purchase price.

This Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes set forth in the Directions for Use, subject to the inherent risks described below, when used in accordance with the Directions for Use under normal conditions.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, ISAGRO MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Buyers and Users of this product must be aware that there are inherent unintended risks associated to the use of this product, independent from the control of Isagro. These risks include, but are not limited to, weather conditions, soil factors, moisture conditions, diseases, irrigation practices, condition of the crop at the time of application, materials which are present in the tank mix with this product or prior to the application of it, cultural practices or the manner of use or application, all risks which are impossible to eliminate. The Buyers and Users should be aware that these factors may cause: ineffectiveness of the product, reduction of harvested yield of the crop (entirely or partially), crop injury or injury to non-target crops or plants or to rotational crops caused by carryover in the soil, resistance of the target weeds to this product. Therefore additional care, treatment and expense are required to take the crop to harvest.

If the Buyer does not agree with the acceptance of these risks, then THE PRODUCT SHOULD NOT BE APPLIED. To the extent consistent with applicable law, by applying this product the Buyer acknowledges and accepts these inherent unintended risks and AGREES THAT ALL SUCH RISKS ASSOCIATED WITH THE APPLICATION AND USE ARE ASSUMED BY THE BUYER.

To the extent consistent with applicable law, ISAGRO or Seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product (including claims based in contract, negligence, strict liability, other tort or otherwise). To the extent consistent with applicable law, the exclusive remedy of the User or Buyer and the exclusive Liability of Isagro or Seller shall be the return of the purchase price of the product, or at the election of Isagro or Seller, the replacement of the product.

To the extent consistent with applicable law, this Company does not warrant any product reformulated or repackaged from this product except in accordance with this Company's stewardship requirements and with express written permission from this Company.

Isagro or its Seller must have prompt notice of any claim so that an immediate inspection of Buyer's or User's can be made. To the extent consistent with applicable law, if Buyer and User do not notify Isagro or Seller of any claims, in proper time, it shall be barred from obtaining any remedy.

To the extent consistent with applicable law, Buyers and Users are deemed to have accepted the terms of this Limitation of Warranty and Liability, which may not be modified by any verbal or written agreement.

Isagro USA, Inc.
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Phone (919) 321-5200
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May 24, 2011

Leonard Cole,
RAL, Biochemical Pesticides Branch
Biopesticides and Pollution Prevention Division (7511P)
Office of Pesticide Programs, EPA
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

RE: Notes on May 19, 2011 Meeting with Isagro USA Regarding AITC

Dear Mr. Cole:

The purpose of this letter is to capture the highlights of our discussions on May 19, 2011 regarding a new product registration for Ally isothiocyanate (AITC). In attendance at that meeting were:

Andre Bryceland, BPPD
Leonard Cole, BPPD
Angela Gonzales, BPPD
Linda Hollis, BPPD
Mike McDavit, BPPD
Jacob Moore, BPPD
Chris Pfeifer, BPPD

Mel Graben, Isagro USA
Dennis Krass, Isagro USA
Amy Roberts, TSG

The purpose of the meeting was to address specific questions regarding an application for registration of AITC (per the agenda for that meeting; copy attached). The group discussed the following:

- A synthetic source of AITC will be used. EPA recommending that information to confirm it is structurally similar or identical to naturally-occurring AITC should be included in the product chemistry. Isagro USA identified synthetic AITC as approximately 99% pure (specific manufacturing location and 5 batch analysis have not yet been completed) and has the same CAS No., and thus the same PC Code for EPA, as naturally-occurring AITC.

- EPA recommended taking care in addressing physical / chemical property requirements for which there are not test notes – stability, storage stability and UV/Visible Absorption.

- Isagro USA identified it will conduct an acute six-pack on the technical grade active ingredient (approx. 99%). EPA identified that information could be used to support rationales for not conducting studies on the formulated end-use product (approx. 96% AITC + [redacted]

- For compliance with the National Organic Program (NOP) for organic production (PRN 2003-1), it will be important to demonstrate that the synthetic source is the same as the naturally-occurring source – in its structure and any other ways. EPA recommended petitioning the National Organic Standards Board (NOSB) for acceptance of the synthetic source. Another path would be to make an argument to EPA and EPA will then consult with NOP/NOSB for concurrence. Either way, this should be accomplished on a separate track from the PRIA application.

- Isagro USA discussed known half-life of AITC in water and soil from published literature, and information to support rationales for ecotoxicity data requirements. The Agency indicated there would not be a concern for avian, nontarget plant and nontarget insects based on the methods of application (direct soil injection or drip tape covered in plastic) and timing of application (pre-plant, so no blooming crops or growing plants present); however, there could be a concern for runoff for aquatic species. Care should be taken in the rationales to discuss the potential for runoff into waters and effects to aquatic species.

- The Agency questioned whether or not the pre-plant application would be a food use – would there still be AITC present at the time crops are planted? It will be important for Isagro USA to provide information on why it is not a food use; specifically information on soil degradation, biodegradability, breakdown products, uptake of AITC, and/or other information to demonstrate AITC is not present or available when crops are planted. The registrant may consider risk mitigation language on the label in the form of a label restriction on when crops can be planted after treatment to ensure there is no AITC present.

  The Agency recommended BPPD scientist Mike Rexrode be included on the meeting minutes to obtain his feedback on the above issue.

- The Agency recommended submitting rationales for data requirements instead of a CITE-ALL. It is not clear if the data in EPA's files would be relevant to the product proposed.

- Isagro USA confirmed the end-use product will be marketed as a methyl bromide replacement.

- The Agency confirmed a PRIA Action Code of B672. If there are two applications (a technical and an end-use product), they will be considered a primary/secondary and as such have a full fee for the first application and a 75% fee reduction for the second (per http://www.epa.gov/pesticides/fees/related-apps.html).

We believe the above represents the results of our discussions. If you have any questions, comments or disagree with the notes above, please do not hesitate to contact me.

Sincerely,

Mel Graben
Regulatory and Technical Manager
Isagro, USA
430 Davis Drive
Suite 240
Morrisville, NC 27560
e-mail: mgraben@isagro-usa.com
Tel: 919-321-5203
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cc: Linda Hollis, Branch Chief, BPPD
Mike Rexrode, Scientist, BPPD
Russell Jones, Senior Scientist, BPPD

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CONFIDENTIAL STATEMENT OF FORMULA ENCLOSED

DATE SUBMITTED	SUBMITTED BY (✓)	
	APPLICANT	BASIC SUPPLIER
AUG 31 2012		

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NOTE

It shall be unlawful—for any person to use for his own advantage or to reveal, other than to the Secretary, or officials or employees of the United States Department of Agriculture or other Federal agencies, or to the courts in response to a subpoena, or to physicians, and in emergencies to pharmacists and other qualified persons, for use in the preparation of antidotes, in accordance with such directions as the Secretary may prescribe, any information relative to formulas of products acquired by authority of Section 4 of the "Federal Insecticide, Fungicide, and Rodenticide Act."

Pages 147-149 - *Confidential Statements of Formula may be entitled to confidential treatment*